

COST AND SCHEDULE  
STATUS REPORT  
MARCH 1984

*7096  
status  
report*

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## TABLE OF CONTENTS -

<u>SECTION I PRELIMINARY ENGINEERING</u>	<u>PAGE</u>
P.E. Narrative	3
P.E. Status Graph	4
Summary of Budget Changes	5
Budget Summary by MACS Codes	6
EB&C Report for Professional Services Contracts	7-9
<u>SECTION II CONTINUED PRELIMINARY ENGINEERING</u>	
C.P.E. Narrative	11
C.P.E. Status Graph	12
Summary of Budget Changes	13
Budget Summary by MACS Codes	14-15
EB&C Report for Professional Services Contracts	17-22
<u>SECTION III FINAL DESIGN</u>	
Final Design Narrative	24
Final Design Status Graph	25
Summary of Budget Changes	26
Budget Summary by MACS Codes	27
EB&C Report for Professional Services Contracts	28-29
<u>SECTION IV TOTAL PROJECT</u>	
Total Project Narrative	31
Total Project Graph	32
Summary of Budget Changes	33
Funding Distribution Graph	34
Budget vs. Actual Graph	35
Budget Summary by MACS Codes	36-37
<u>SECTION V SECTION DESIGNER EVALUATIONS</u>	
Subcontract Evaluation Summary	39
Overall Contract Cost Assessment	40-41
Overall Contract Scheduling Assessment	42
Station Designer Evaluations and Graphs	43-135
System Designer Evaluations	136-147

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SECTION I  
PRELIMINARY ENGINEERING

SCRTD METRO RAIL PROJECT  
PRELIMINARY ENGINEERING STATUS  
MARCH 1984

This section details the \$33.019 million currently budgeted for Preliminary Engineering. Expenditures to date total \$32.868 million. The original budget is \$38.8 million, and the current budget mentioned above is \$33.0 million. The difference, \$5.8 million, represents the P.E. underrun and has been transferred to C.P.E.

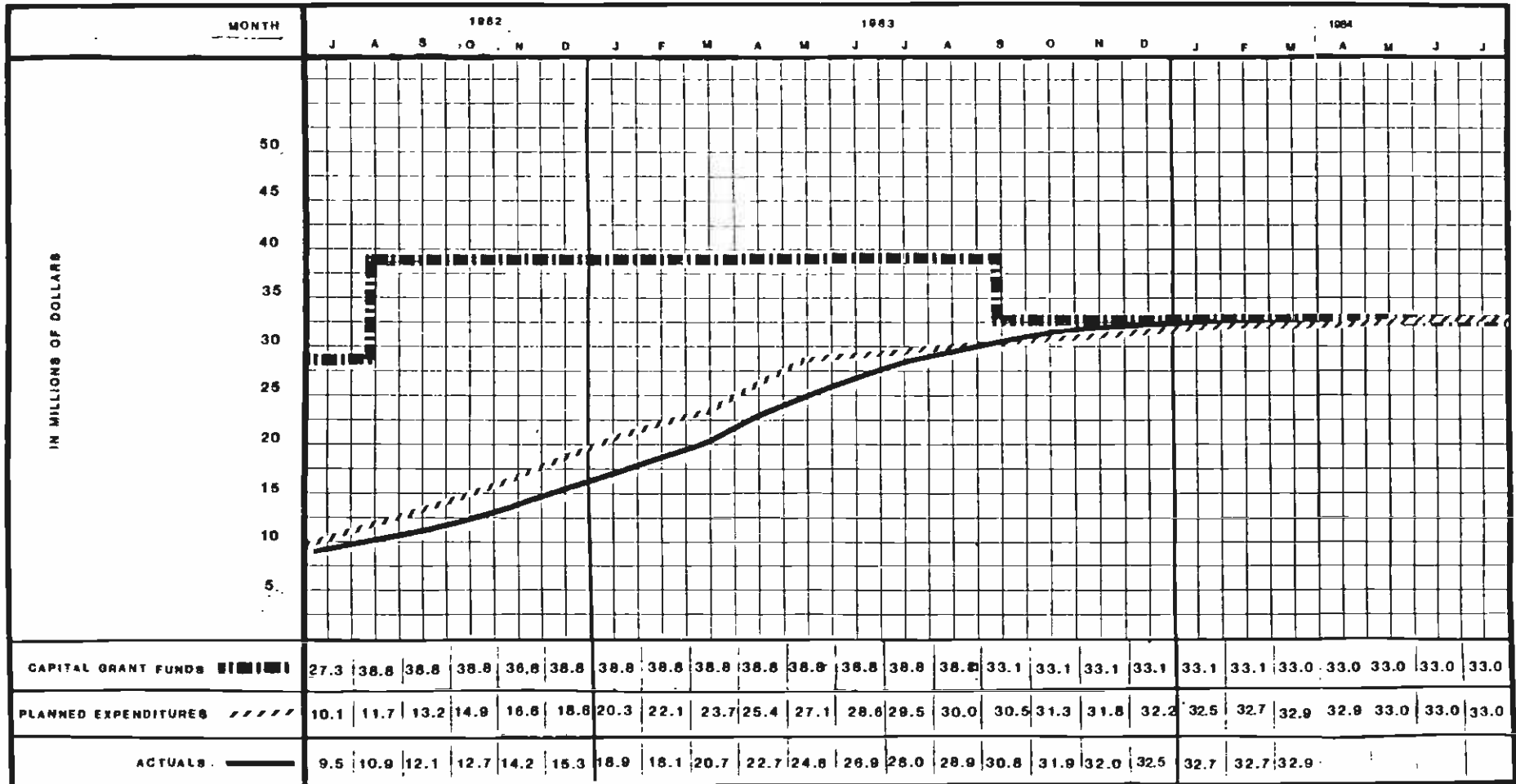
All Preliminary Engineering contracts are complete. Administration is taking steps to close all contracts with official termination letters. Once all invoicing is completed, all contract budgets will be reduced to match their expenditures and any monies remaining in the P.E. line items will be transferred to the same line items in C.P.E. R.T.D. has yet to receive final invoices on the following contracts:

<u>Audit #</u>	<u>Contract</u>	<u>Funds Remaining</u>
2419	Sedway/Cooke	\$ 46,690
2705	Schimpeler/ Corradino	15,393
2611	County of L.A.	26,112
2900	Schimpeler/ Corradino	8,369
2910	NBMOW & M	13,350
2943	O'Melveny & Meyers	40,430
	TOTAL	\$ 150,344

The accompanying graph illustrates the planned P.E. expenditures against the actual expenditures. The difference between planned P.E. expenditures and actual P.E. expenditures is \$150,344 (as shown in the above table). This amount of money is currently available to spend in closing out P.E.

# RTD METRO RAIL PROJECT PRELIMINARY ENGINEERING STATUS

MARCH 1984



-7-

SUMMARY OF PRELIMINARY ENGINEERING  
 BUDGET CHANGES  
 AS OF MARCH 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
July 1982	27.300	Initial P.E. funding Phase I & II
August 1982	38.843	P.E. Phase III
September 1983	33.095	Transfer of P.E. underrun to C.P.E.
March 1984	33.019	Additional transfer of P.E. underrun to C.P.E.

05/24/84  
P&C(WP)-7.3

Date Prepared: 05/07/84  
Status as of : 05/07/84  
WBS # : 11DAA3113

SCRTD METRO RAIL PROJECT  
PRELIMINARY ENGINEERING BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE* 021	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WRG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
A.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 22	\$ 22	\$ 22	\$ 22	\$ 22	\$ 0
B.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	- 0 -	1,100	1,100	1,100	1,100	1,100	0
C.	(20.08.01) Professional Services Contracts	- 0 -	- 0 -	- 0 -	151	24,108	24,259	24,259	24,259	24,259	0
D.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	6,499	6,499	6,499	6,499	6,499	0
E.	(20.15.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	1,019	1,019	1,019	1,019	1,019	0
G.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	- 0 -	120	120	120	120	120	0
GRAND TOTAL		\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 151	\$ 32,868	\$ 33,019	\$ 33,019	\$ 33,019	\$ 33,019	\$ 0

\* AFE - Authorization for Expenditure  
\*\* MACS - Management and Control System

PRELIMINARY ENGINEERING BUDGET & COST REPORT

PROFESSIONAL SERVICES CONTRACTS

March 1984

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
I. WAYS & STRUCTURES					
2440-2	DMJM/PBQ&D	5,355,054	5,355,054	C	Yes
2365-1	Teledyne	283,872	283,872	C	Yes
2428-1	Wilson Ihrig	169,139	169,139	C	Yes
2284-1	Lindvall Richter	271,000	271,000	C	Yes
2256-2	Converse Consults.	1,151,855	1,151,855	C	Yes
2427	Converse Consults.	104,000	104,000	C	Yes
2493-1	PSG Waters	188,387	188,387	C	Yes
2719-1	Real Estate Analysts	37,238	37,238	C	Yes
2720-1	Lea Associates	38,497	38,497	C	Yes
2718-1	Natelson Co.	40,000	40,000	C	Yes
2593	Velma Marshall	24,961	24,961	C	Yes
2654	Glenn Johnson	15,217	15,217	C	Yes
2757	P.E. Sperry	7,606	7,606	C	*
2760	T.G. McCusker	7,253	7,253	C	*
2274	Carl Englund	14,153	14,153	C	*
2195	American Aerial	3,504	3,504	C	*
2640	Larry Gallagher	971	971	C	*
2955	Kellogg Corp.	24,900	24,900	C	*
TOTAL WAYS & STRUCTURES		\$7,737,607	\$7,737,607	N/A	N/A
II. SYSTEMS DESIGN & ANALYSIS					
2439	Kaiser Engineers	3,502,464	3,502,464	C	Yes
2214	JPL	9,500	9,500	C	Yes
2217	Walter Woods	1,020	1,020	C	Yes
2595	Robert Johnston	319	319	C	*
2434-4	B,A&H	3,265,503	3,265,503	C	Yes
2218	Montreal Comm. of Transportation	5,000	5,000	C	Yes
2360	Log/An	1,932	1,932	C	Yes
2349	David Ashley	9,800	9,800	C	Yes
TOTAL SYSTEMS DESIGN & ANALYSIS		\$6,795,538	\$6,795,538	N/A	N/A

A.B.DICK  
P&C-1.3  
5.08.84



PRELIMINARY ENGINEERING  
BUDGET & COST REPORT (cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
III. STATIONS					
2510-2	Harry Weese	4,087,190	\$4,087,190	C	Yes
2419-4	Sedway/Cooke	1,713,865	1,667,175	C	Yes
2418-2	City of L.A.	1,755,815	1,755,815	C	Yes
2705-4	Schimpeler-Corr.	657,158	641,765	C	Yes
2842	Schimpeler-Corr.	10,000	10,000	C	Yes
2803	Schimpeler-Corr.	18,000	18,000	C	Yes
2797	Robert Harmon	24,900	24,900	C	Yes
2611-3	County of L.A.	229,300	203,188	C	Yes
2160-5	Barton-Aschman	25,000	25,000	C	Yes
2225	Barton-Aschman	8,501	8,501	C	*
2395	Computer Usage Co.	8,312	8,312	C	*
2764-1	W.F. Hoey	4,995	4,995	C	*
2610	W.F. Hoey	990	990	C	*
2266	W.F. Hoey	5,000	5,000	C	*
2421	PBQ&D	1,409	1,409	C	*
2900	Schimpeler-Corr.	151,000	142,631	C	Yes
TOTAL STATIONS		\$8,701,435	\$8,604,871	N/A	N/A
IV. PROGRAM CONTROL					
2908	Data General	10,967	10,967	C	Yes
2279	TAD-Log/An	451,199	451,199	C	Yes
2163	TAD-Log/An	15,000	15,000	C	Yes
2363	Log/An	28,009	28,009	C	*
2534	TAMS	24,987	24,987	C	*
TOTAL PROGRAM CONTROL		\$ 530,162	\$ 530,162	N/A	N/A
VI. COMMUNITY RELATIONS					
2620	CKT Associates	18,070	18,070	C	*
2619	Institute of Cultural Affairs	23,260	23,260	C	*
2400	John Hennessy	107,712	107,712	C	*
TOTAL COMMUNITY RELATIONS		\$ 149,042	\$ 149,042	N/A	N/A

A.B.Dick  
P&C-1.3  
5.08.84

PRELIMINARY ENGINEERING  
BUDGET & COST REPORT (cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
VII. MISCELLANEOUS CONTRACTS					
3002	Burton Jones	3,750	3,750	C	*
2726	Townsend Assoc.	23,365	23,365	C	*
2907	Jacobs Assoc.	24,900	24,900	C	*
2823	Manuel Padron	7,358	7,358	C	*
2669	Eugene Stann	6,508	6,508	C	*
2671	Fred Burke	2,692	2,692	C	*
2670	George Krambles	9,670	9,670	C	*
2677	Robert Johnston	8,044	8,044	C	*
2668	William Alexander	3,858	3,858	C	*
2430	Bureau de Transit			C	*
	Metro	2,187	2,187	C	*
2499	Barton-Aschman	4,121	4,121	C	*
2179	Tanzmann Associates	9,881	9,881	C	*
2286	Tanzmann Associates	843	843	C	*
2776	U.S.C.	1,539	1,539	C	*
2930	Lincoln Institute	12,689	12,689	C	*
2902	NTS	8,467	8,467	C	Yes
2910-2	NBMBW&M	115,000	101,650	*	*
2943	O'Melveney & Meyers	100,000	59,570	*	*
TOTAL MISC. CONTRACTS		\$ 344,872	\$ 291,092	N/A	N/A
GRAND TOTAL P.E.		\$24,258,656	\$24,108,312	N/A	N/A

\*

Note: Asterisked items indicate Peer Review Boards, General Managers Transit Technical Advisory Committee, and "As Needed" Consultants for whom schedule status is not relevant

SECTION II  
CONTINUED PRELIMINARY ENGINEERING

SCRTD METRO RAIL PROJECT  
CONTINUED PRELIMINARY ENGINEERING STATUS  
MARCH 1984

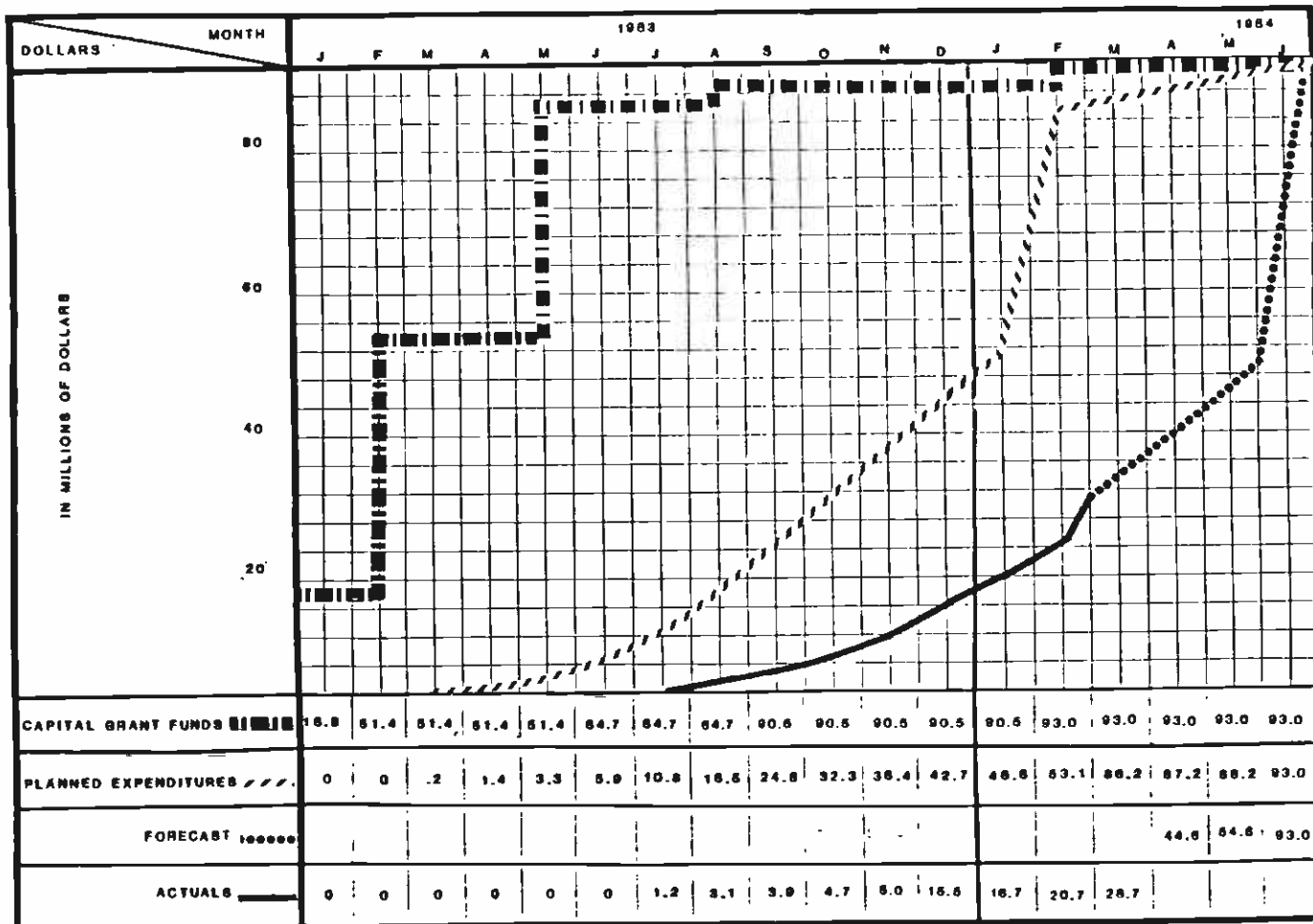
This section details the \$93.037 million currently budgeted for Continued Preliminary Engineering. Expenditures to date total \$28.665 million.

TSD Program Control has conducted an independent analysis of the cost and schedule status of each Section Designer contract within C.P.E. Accompanying each of these evaluations is a graph depicting Progress, Productivity, and Manpower status. (See Subcontractor Evaluations - Section III of this report.) Also included is a graph illustrating overall financial status of the C.P.E. Phase.

To date, \$5.8 million has been transferred from the P.E. line items to the same line items in C.P.E. When the P.E. phase is formally closed out any remaining funds will then be transferred from P.E. to C.P.E. Next a budget amendment request will be sent to U.M.T.A. to address the transferring of funds between line items within C.P.E. This transfer is necessary in order to distribute the funds to the MACS codes where monies have or will be spent during C.P.E.

# RTD METRO RAIL PROJECT CONTINUED PRELIMINARY ENGINEERING STATUS

MARCH 1984



SUMMARY OF CONTINUED PRELIMINARY ENGINEERING  
 BUDGET CHANGES  
 AS OF MARCH 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
January 1983	18.750	Initial C.P.E. funding Phase I
February 1983	51.380	Funding for acquisition of Santa Fe Rail Yard
June 1983	84.713	C.P.E. Phase II
September 1983	90.461	Transfer of P.E. underrun to C.P.E.
February 1984	93.037	Additional funding from LACTC

05/24/84  
P&C(WP)-7.7

Date Prepared: 05/07/84  
Status as of : 05/07/84  
WBS # : 11DAA3113

SCRID METRO RAIL PROJECT  
CONTINUED PRELIMINARY ENGINEERING BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE*	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
021											
A.	(20.02.01) Purchase of Support Autos	\$ 18	\$ - 0 -	\$ 18	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 18	\$ 18	\$ 18	\$ 0
B.	(20.02.02) Purchase/Installation of Support Equipment	40	195	235	- 0 -	66	66	301	301	301	0
TED	(20.02.07) Purchase/Installation of MIS Equipment	77	- 0 -	77	823	- 0 -	823	900	900	900	0
TED	(20.02.08) Purchase/Installation of Communications Equipment	100	- 0 -	100	- 0 -	- 0 -	- 0 -	100	100	100	0
C.	(20.08.01) Professional Services Contracts	303	97	400	28,228	24,683	52,911	53,311	53,311	53,311	0
D.	(20.15.02) Force Account Work	1,665	- 0 -	1,665	- 0 -	2,396	2,396	4,061	4,061	4,061	0

05/24/84  
P&C(WP)-7.7

Date Prepared: 05/07/84  
Status as of : 05/07/84  
WBS # : 110AA3113

SCRIPD METRO RAIL PROJECT  
CONTINUED PRELIMINARY ENGINEERING BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE*	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
E.	(20.15.90) Other Supporting Services	57	147	204	- 0 -	1,159	1,159	1,363	1,363	1,363	0
G.	(20.16.00) General & Administrative	20	1	21	87	245	332	353	353	353	0
1045	ROW Acquisition for Central Yard & Shops	32,478	- 0 -	32,478	36	116	152	32,630	32,630	32,630	0
GRAND TOTAL		\$ 34,758	\$ 440	\$ 35,198	\$ 29,174	\$ 28,665	\$ 57,839	\$ 93,037	\$ 93,037	\$ 93,037	\$ 0

\* AFE - Authorization for Expenditure  
\*\* MACS - Management and Control System



CONTINUED PRELIMINARY ENGINEERING BUDGET & COST REPORT

PROFESSIONAL SERVICES CONTRACTS

March 1984

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
<b>I. TRANSIT FACILITIES</b>					
3301	CalTrans	2,800,000	- 0 -	*	*
2256	CWDD	360,000	\$348,626	C	Yes
2440-2	DMJM/PBQ&D	50,000	50,000	C	Yes
2284-3	Lindvall Richter	150,000	125,180	*	Yes
3056	L.A. Co. Museum	24,500	16,333	90	Yes
2510-2	Harry Weese	50,000	50,000	C	Yes
2900-3	Schimpeler Corradino	30,000	- 0 -	C	Yes
3212	W.H. Patterson	7,000	3,766	C	Yes
3173	Dept. of Water & Power	270,000	- 0 -	*	*
3172	Pacific Bell	200,000	- 0 -	*	*
3237	Western Union Telegraph	60,000	- 0 -	*	*
3262	N.J. Maloney	1,500	- 0 -	*	*
3138	City Master Agreement	753,000	93,153	*	*
3211	Eugene Stan	7,000	2,778	*	*
N/A	CH2M Hill/Kellogg Corp.	24,900	- 0 -	*	*
N/A	John Gordon	20,000	- 0 -	*	*
N/A	Joseph Giovannini	20,000	- 0 -	*	*
N/A	Julia Brown	20,000	- 0 -	*	*
N/A	Bettye Saar	20,000	- 0 -	*	*
N/A	Alan Sieorty	20,000	- 0 -	*	*
<b>TOTAL TRANSIT FACILITIES</b>		<b>\$4,887,900</b>	<b>689,836</b>	<b>N/A</b>	<b>N/A</b>
<b>II. SYSTEMS DESIGN &amp; ANALYSIS</b>					
2434-5	Booz-Allen & Hamilton	237,549	237,549	C	Yes
2439-2	Kaiser Engineers	50,000	50,000	C	Yes
3090	Cons. Fire Prot. Dist.	95,200	53,025	*	*
3136	Booz-Allen & Hamilton	1,000,000	233,231	49	Yes
3170	Mellon Institute	24,900	- 0 -	*	*
<b>TOTAL SYSTEMS DESIGN &amp; ANALYSIS</b>		<b>\$1,407,649</b>	<b>573,805</b>	<b>N/A</b>	<b>N/A</b>

A.B.DICK  
P&C 1.2  
5.14.84

CONTINUED PRELIMINARY ENGINEERING  
BUDGET AND COST REPORT (cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
III. PROGRAM CONTROL					
3044	Sharon Clark	9,900	9,536	C	No
TOTAL PROGRAM CONTROL		\$ 9,900	\$ 9,536	N/A	N/A

IV. PLANNING

3010	CRA	500,000	46,577	20	No
2797-2	Robert Harmon	50,000	50,000	C	Yes
3137	Jt. Dev. of Sta. Plans	573,000	-0-	35	Yes
3254	Schimpeler-Corradino	847,213	126,252	-0-	Yes
TOTAL PLANNING		\$ 1,970,213	\$222,829	N/A	N/A

V. REAL ESTATE - YARD & SHOPS ACQUISITION

2963	AT&SF Railway	44,000	31,458	*	*
3032	Flavell	50,000	36,716	*	*
3033	Lea Associates	50,000	39,329	*	*
2994	TICOR	8,300	8,300	C	Yes
TOTAL YARD & SHOPS ACQUISITION		\$152,300	\$115,803	N/A	N/A

OTHER REAL ESTATE

3000	County of L.A.	24,900	24,108	*	*
3116	Chicago Title Services	50,000	-0-	*	*
3102	Robert Swanson	22,500	13,200	*	*
3161	Eugene Guitierrez	4,000	4,000	*	*
3162	Robert Jackson	3,500	-0-	*	*
3163	Ralph Laurain	3,750	3,750	*	*
3164	David Zoraster	3,500	-0-	*	*
3175	TICOR	75,000	8,000	*	*
3189	Joseph Gary	5,000	4,342	*	*
3139	William Helpes	4,250	4,250	*	*
3182	Thomas Scalora	8,500	4,250	*	*
3180	Lowell Steward Assoc.	2,500	-0-	*	*

CONTINUED PRELIMINARY ENGINEERING  
BUDGET AND COST REPORT (cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$</u> <u>Budget</u>	<u>\$</u> <u>Actual</u>	C=Completed or <u>% Phys.</u> <u>Compl.</u>	<u>On</u> <u>Schedule</u>
OTHER REAL ESTATE (Cont'd)					
3150	Jack Jue	3,500	-0-	*	*
3181	Norman Eichel	8,500	4,250	*	*
3179	Lee Hill	2,500	-0-	*	*
3209	Arthur Anderson	1,550	1,550	*	*
3261	Robert Olson	1,500	-0-	*	*
3260	Milton Tynan	1,600	-0-	*	*
TOTAL OTHER REAL ESTATE		\$226,550	71,700	N/A	N/A
TOTAL REAL ESTATE		\$378,850	\$187,503	N/A	N/A
VI. LEGAL					
3009	MPR&T	24,500	-0-	*	*
2990	Bill Hecht	24,500	-0-	*	*
TOTAL LEGAL		\$ 49,000	\$ -0-	N/A	N/A
VII. MISCELLANEOUS CONTRACTS					
3030	Dillon Reed & Co.	24,900	-0-	*	*
3065	David B. Ashley	7,000	6,911	C	*
3096	First Boston Corp.	24,900	-0-	*	*
TOTAL MISCELLANEOUS CONTRACTS		\$ 56,800	\$ 6,911	N/A	N/A

CONTINUED PRELIMINARY ENGINEERING  
BUDGET AND COST REPORT (cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>	<u>C=Completed or % Phys. Compl.</u>	<u>On Schedule</u>
VIII. GENERAL CONSULTANT					
2967	MRTC	36,932,598	23,108,114	N/A	N/A
N/A	MRTC	7,370,362	- 0 -		
TOTAL GENERAL CONSULTANT		\$44,302,960	\$23,108,114	N/A	N/A
GRAND TOTAL C.P.E.		\$53,063,272	\$24,798,534	N/A	N/A

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\*  
Note: Asterisk (\*) items indicate Peer Review Boards, General Managers Transit Technical Advisory Committee and "As Needed" Consultants for whom schedule status is not relevant.

CONTINUING PRELIMINARY ENGINEERING

UNOBLIGATED-RESERVED BUDGET AMOUNTS-PROFESSIONAL SERVICES CONTRACTS

Listed below are budget amounts reserved for Professional Services Contracts, i.e., budget amounts for work which is anticipated but not yet committed. In parenthesis is the date the budget amounts are expected to be committed (authorized for solicitation by the Board, advertised, or for which negotiations have been started pursuant to an approved purchase requisition). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts and "Proposed New Contracts" which identifies dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollar amounts, and expected commitment dates.

I. PROPOSED CONTRACT CHANGES:

TOTAL PROPOSED CONTRACT CHANGES	\$	- 0 -
---------------------------------	----	-------

II. PROPOSED NEW CONTRACTS:

Transit Facilities

o Value Engineering Consultants	\$	100,100
o Department of Water & Power		<u>200,000</u>

Total Transit Facilities	\$	300,100
--------------------------	----	---------

Real Estate - Yard & Shops Acq.

o Review Appraisals	\$	<u>2,950</u>
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Total Real Estate	\$	2,950
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TOTAL PROPOSED NEW CONTRACTS	\$	303,050
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GRAND TOTAL RESERVED AMOUNT	\$	303,050
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CONTINUING PRELIMINARY ENGINEERING

CURRENT BUDGET: UNOBLIGATED-COMMITTED PROFESSIONAL SERVICES CONTRACTS

Listed below are Professional Services Contracts which are forecasted but unobligated as of the status date. These are budget amounts for work which has been authorized for solicitation by the Board, has been advertised, or for which negotiations have been started pursuant to an approved purchase requisition. In parenthesis is the date the contract is expected to be obligated (signed by the General Manager). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts; "Proposed New Contracts" which in dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollars amounts, and expected obligation dates.

I. PROPOSED CONTRACT CHANGES:

<u>Real Estate</u>	
o AT & SF Railway	\$ 20,000
Total Real Estate	\$ 20,000
TOTAL PROPOSED CONTRACT CHANGES	\$ 20,000

II. PROPOSED NEW CONTRACTS:

<u>Transit Facilities</u>	
o Lindvall Richter	\$ 35,000
Total Transit Facilities	\$ 35,000
<u>Systems Design &amp; Analysis</u>	
o SRI	20,000
o MIDCOM	10,000
o SCE	3,500
Total SD & A	\$ 33,500
<u>Real Estate</u>	
o Business Valuation Services	\$ 8,500
Total Real Estate	\$ 8,500
TOTAL PROPOSED NEW CONTRACTS	\$ 77,000
GRAND TOTAL COMMITTED AMOUNT	\$ 97,000

SECTION III  
FINAL DESIGN

MTA LIBRARY

SCRTD METRO RAIL PROJECT  
FINAL DESIGN STATUS  
MARCH 1984

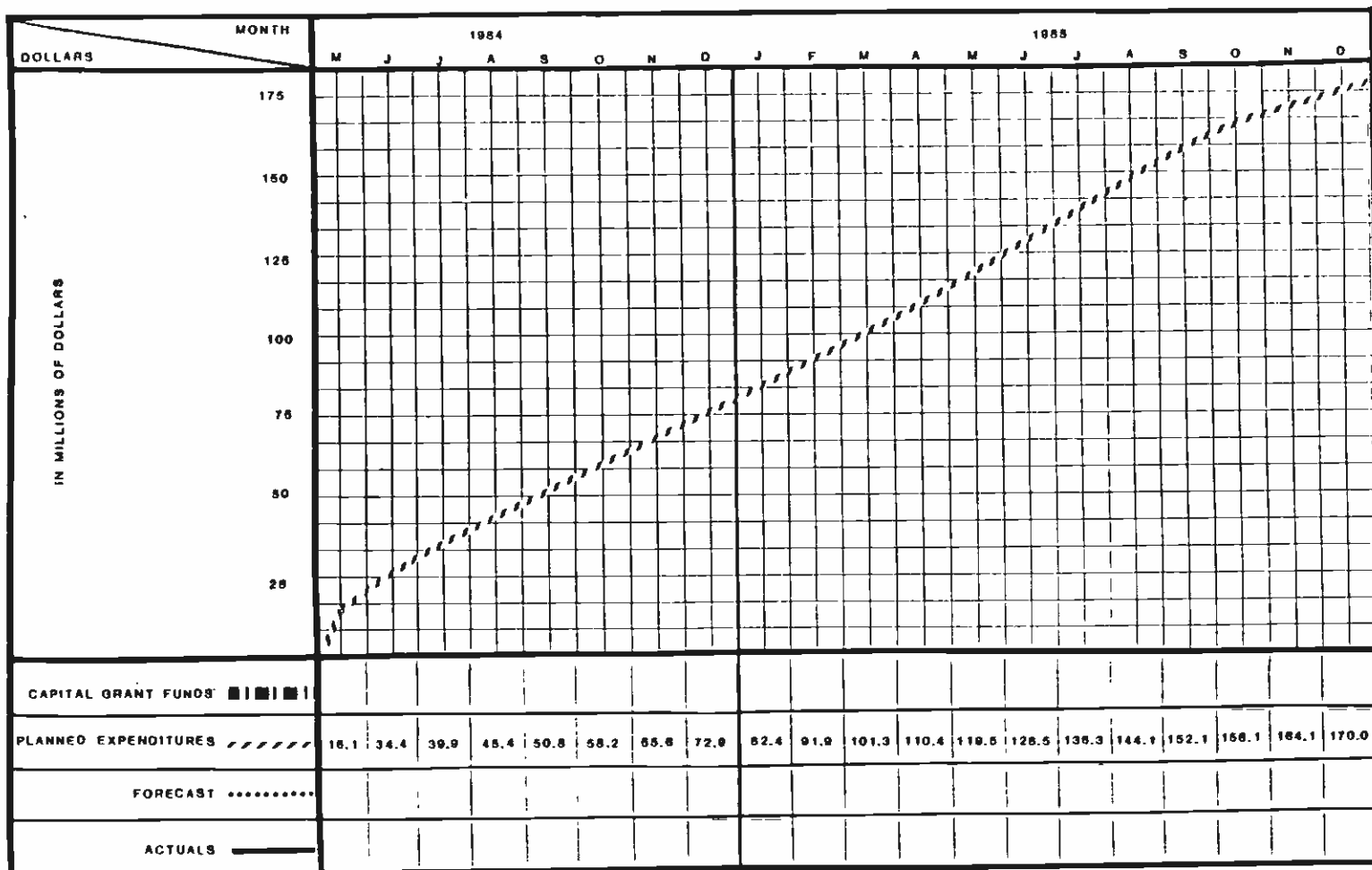
This section details all Final Design contracts. Currently, no budget is available for any committed or reserved contracts so these contracts will remain unobligated until Final Design funding is awarded.

The accompanying graph illustrates the Planned Expenditures of the anticipated grant of \$170.0 million.



# RTD METRO RAIL PROJECT FINAL DESIGN STATUS

MARCH 1984



SUMMARY OF FINAL DESIGN  
BUDGET CHANGES  
AS OF MARCH 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
-------------	--	------------------------------

-0-

05/24/84  
P&C(WP)-8.22

Date Prepared: 05/08/84  
Status as of : 05/08/84  
WBS # : 11DAA3113

SCRIPD METRO RAIL PROJECT  
FINAL DESIGN BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE* 021	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
A.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 0
B.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	0
C.	(20.08.01) Professional Services Contracts	60,002	8,708	68,710	- 0 -	- 0 -	- 0 -	68,710	68,710	- 0 -	[68,710]
D.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	0
E.	(20.15.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	0
G.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	0
GRAND TOTAL		\$ 60,002	\$ 8,708	\$ 68,710	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 68,710	\$ 68,710	\$ - 0 -	\$ [68,710]

\* AFE - Authorization for Expenditure  
\*\* MACS - Management and Control System

FINAL DESIGN

CURRENT BUDGET: UNOBLIGATED-COMMITTED PROFESSIONAL SERVICES CONTRACTS

Listed below are Professional Services Contracts which are forecasted but unobligated as of the status date. These are budget amounts for work which has been authorized for solicitation by the Board, has been advertised, or for which negotiations have been started pursuant to an approved purchase requisition. In parenthesis is the date the contract is expected to be obligated (signed by the General Manager). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts; "Proposed New Contracts" which in dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollars amounts, and expected obligation dates.

I. PROPOSED CONTRACT CHANGES:

TOTAL PROPOSED CONTRACT CHANGES	\$ - 0 -
---------------------------------	----------

II. PROPOSED NEW CONTRACTS:

<u>Construction Management</u>		
o Construction Management	\$ 8,708,000	
TOTAL PROPOSED NEW CONTRACTS	\$ 8,708,000	
GRAND TOTAL COMMITTED AMOUNT		\$ 8,708,000

FINAL DESIGN

UNOBLIGATED-RESERVED BUDGET AMOUNTS-PROFESSIONAL SERVICES CONTRACTS

Listed below are budget amounts reserved for Professional Services Contracts, i.e., budget amounts for work which is anticipated but not yet committed. In parenthesis is the date the budget amounts are expected to be committed (authorized for solicitation by the Board, advertised, or for which negotiations have been started pursuant to an approved purchase requisition). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts and "Proposed New Contracts" which identifies dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollar amounts, and expected commitment dates.

I. PROPOSED CONTRACT CHANGES:

TOTAL PROPOSED CONTRACT CHANGES	\$	- 0 -
---------------------------------	----	-------

II. PROPOSED NEW CONTRACTS:

<u>General Consultant</u> o MRTC FY'85 AWP	\$ 60,002,448
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TOTAL PROPOSED NEW CONTRACTS	\$ 60,002,448
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GRAND TOTAL RESERVED AMOUNT	\$ 60,002,448
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SECTION IV  
TOTAL PROJECT

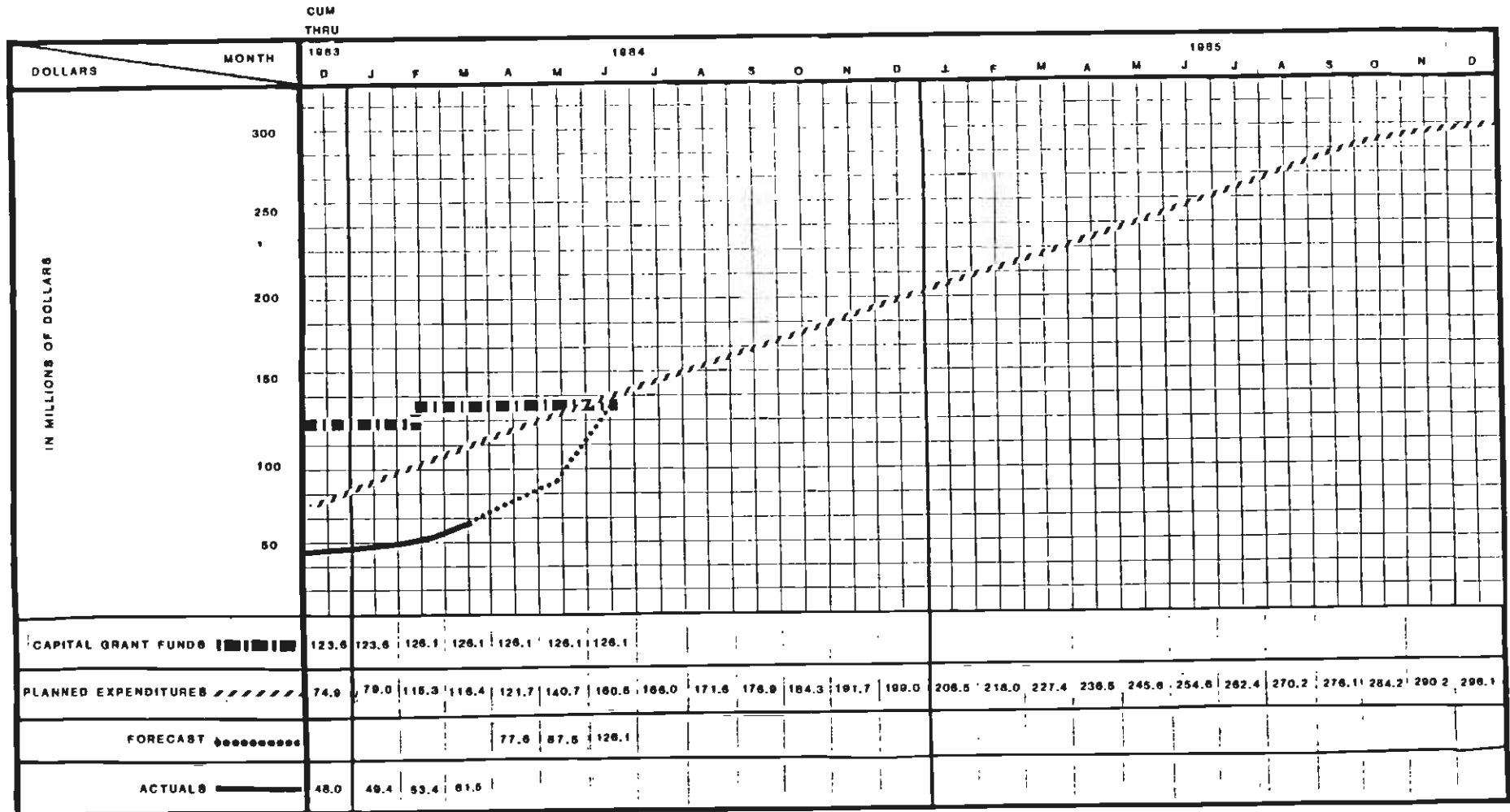
SCRTD METRO RAIL PROJECT  
TOTAL PROJECT STATUS  
MARCH 1984

This section details the \$126.056 million currently budgeted for the Metro Rail Project. The expenditures to date for the total project are \$61.533 million.

The accompanying graph illustrates the planned expenditures, \$118.4 million, against the actual expenditures \$61.5 million. The variance is due primarily to the late issuance of contract NTP's and the late Acquisition of R-O-W properties.

# RTD METRO RAIL PROJECT TOTAL PROJECT STATUS

MARCH 1984





SUMMARY OF TOTAL PROJECT  
BUDGET CHANGES  
AS OF MARCH 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
July 1982	27.300	Initial P.E. funding Phase I & II
August 1982	38.843	P.E. Phase III
January 1983	57.593	C.P.E. Phase I
February 1983	90.223	Funding for acquisition of Santa Fe Rail Yard
June 1983	123.556	Net Project Budget
February 1984	126.056	Additional funding from LACTC

# METRO RAIL PROJECT

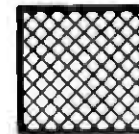
## FUNDING DISTRIBUTION

### TOTAL PROJECT

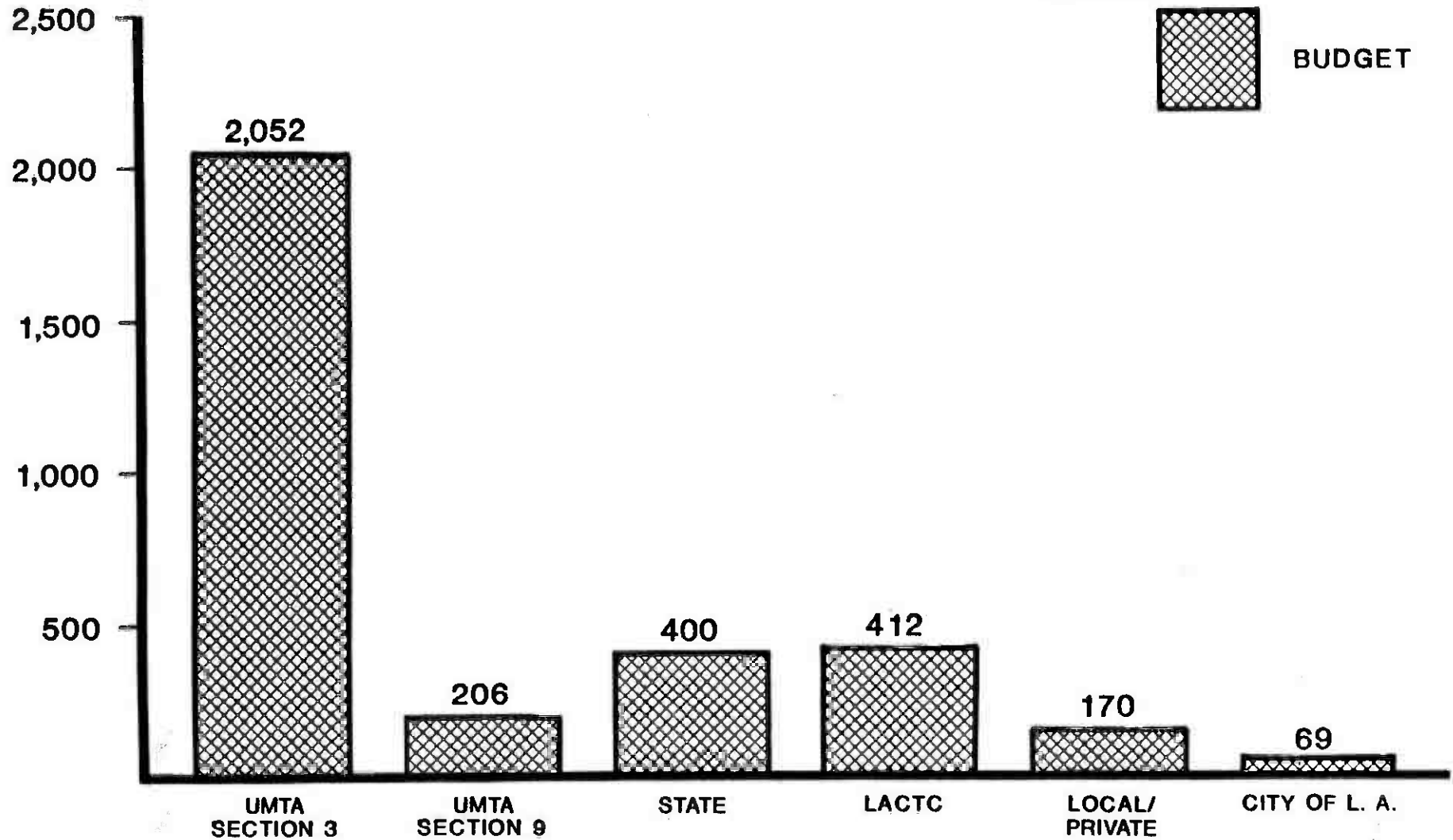
AS OF 03/31/84

MILLIONS  
OF \$

LEGEND:



BUDGET



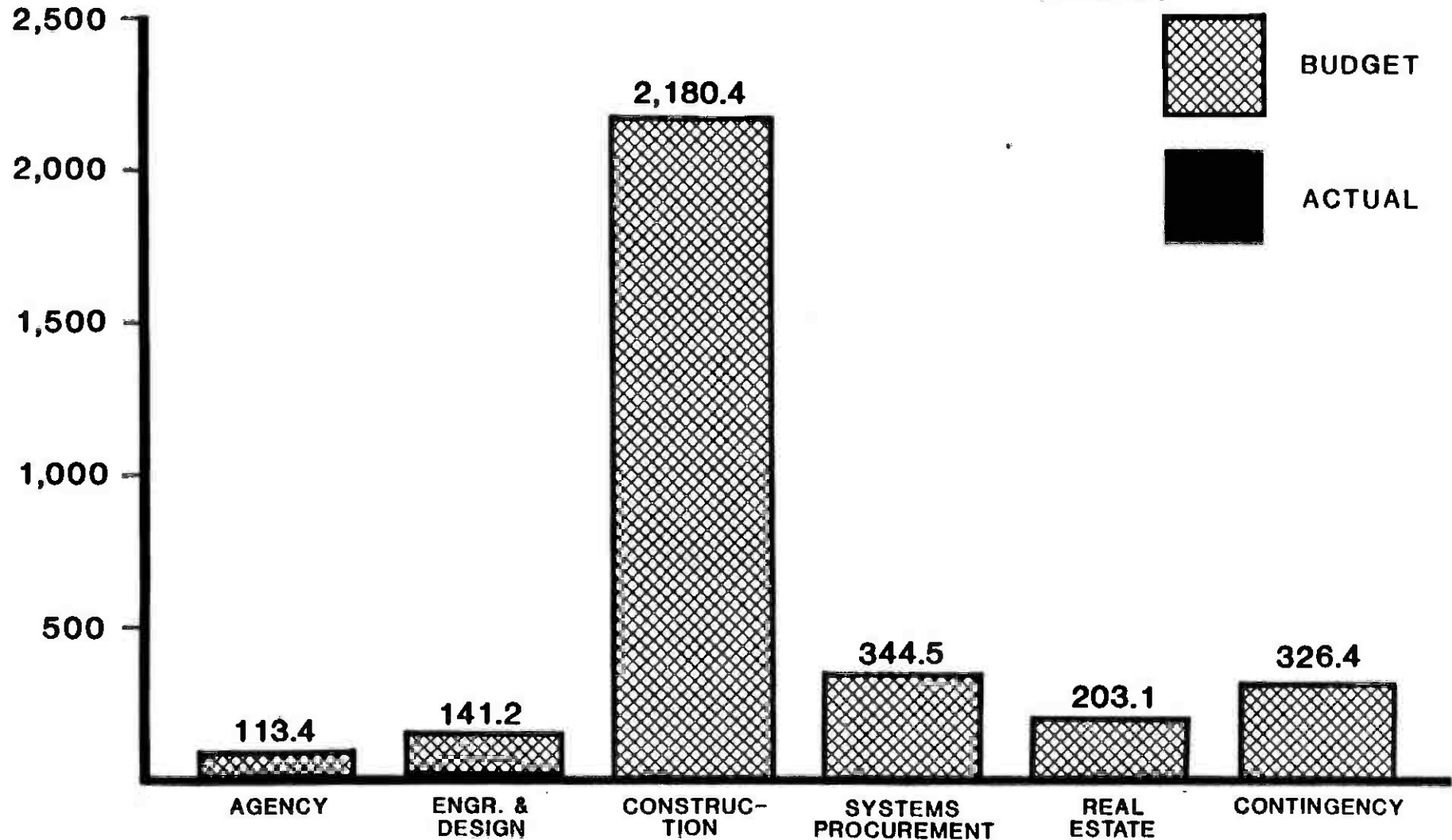
# METRO RAIL PROJECT

## BUDGET VS. ACTUAL

### TOTAL PROJECT

AS OF 03/31/84

MILLIONS  
OF \$



05/09/84  
P&C(WP)-7.6

Date Prepared: 05/07/84  
Status as of : 05/07/84  
WBS # : 110AA3113

SCRTD METRO RAIL PROJECT  
TOTAL PROJECT BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE*	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WRG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
021											
A.	(20.02.01) Purchase of Support Autos	\$ 18	\$ - 0 -	\$ 18	\$ - 0 -	\$ 22	\$ 22	\$ 40	\$ 40	\$ 40	\$ 0
B.	(20.02.02) Purchase/Installation of Support Equipment	40	195	235	- 0 -	1,166	1,166	1,401	1,401	1,401	0
TBD	(20.02.07) Purchase/Installation of MIS Equipment	77	- 0 -	77	823	- 0 -	823	900	900	900	0
TBD	(20.02.08) Purchase/Installation of Communications Equipment	100	- 0 -	100	- 0 -	- 0 -	- 0 -	100	100	100	0
C.	(20.08.01) Professional Services Contracts	60,305	8,805	69,110	28,379	48,791	77,170	146,280	146,280	77,570	[68,710]
D.	(20.15.02) Force Account Work	1,665	- 0 -	1,665	- 0 -	8,895	8,895	10,560	10,560	10,560	0

-36-

05/09/84  
P&C(WP)-7.6

Date Prepared: 05/07/84  
Status as of : 05/07/84  
WBS # : 11DAA3113

SCRTD METRO RAIL PROJECT  
TOTAL PROJECT BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE*	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	EST. AT COMPLETION (8)	APPROVED BUDGET (9)	VARIANCE (10=9-8)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)				
E.	(20.15.90) Other Supporting Services	57	147	204	0	2,178	2,178	2,382	2,382	2,382	0
G.	(20.16.00) General & Administrative	20	1	21	87	365	452	473	473	473	0
045	ROW Acquisition for Central Yard & Shops	32,478	- 0 -	32,478	36	116	152	32,630	32,630	32,630	0
GRAND TOTAL		\$ 94,760	\$ 9,148	\$ 103,908	\$ 29,325	\$ 61,533	\$ 90,858	\$ 194,766	\$ 194,766	\$ 126,056	\$ [68,710]

Note: Contingencies are not included.

\* AFE - Authorization for Expenditure  
\*\* MACS - Management and Control System

SECTION V  
SUBCONTRACTOR EVALUATIONS

STATUS AS OF MARCH 1984

METRO RAIL PROJECT  
SECTION DESIGN  
SUBCONTRACT EVALUATION SUMMARY

UNIT NO.	DESCRIPTION	TOTAL % COMPLETE		CURRENT INCRE- MENTAL PROGRESS	PRODUCTIVITY BASED ON		NEGOTIATED CONTRACT AMOUNT	FORECAST AT COMPLETION		TO COMPLETE AVERAGE EFFICIENCY *
		F'CAST	ACTUAL		MHRS	\$\$		MRTC	TSD PROJECTED	
A100	YARD AND SHOPS	58%	50%	N/A	94.5%	90%	\$ 4,080,878	\$ 5,112,000	\$ 5,680,000	113%
A135	UNION STATION	60%	58%	3	108%	119%	2,946,000	2,968,000	2,494,118	82%
A140	CIVIC CENTER/5TH & HILL/LINE	25%	24.5%	4.5	85%	93%	6,203,707	6,210,000	6,677,419	103%
A165	7TH & FLOWER	50%	54%	4	104%	114%	2,129,587	2,445,000	2,144,737	88%
A170	WILSHIRE/ALVARADO	45%	50%	10	116%	109%	3,119,430	3,400,000	3,119,266	92%
A195	WILSHIRE/VERMONT	62%	40%	2	95%	93%	1,541,126	2,135,000	2,295,698	92%
A220	WILSHIRE/NORMANDIE & WILSHIRE/WESTERN	13%	12%	2	96.8%	92%	4,676,695	4,828,000	5,247,826	101%
A240	WILSHIRE/GRENSHAW	10%	8%	7	N/A	N/A	2,394,790	2,635,000	2,635,000	N/A
A245	WILSHIRE/LA BREA	40%	32.8%	12.5	133%	124%	1,608,579	1,628,000	1,312,903	91%
A250	WILSHIRE/FAIRFAX	N/A	2%	2	N/A	N/A	3,956,421	4,209,000	4,209,000	N/A
A275	FAIRFAX/BEVERLY	15%	12%	4	88%	78%	2,250,000	2,300,000	2,948,718	104%
A310	FAIRFAX/SANTA MONICA & LA BREA/SUNSET	9%	7.5%	2	117%	95%	4,409,415	4,409,000	4,641,053	101%
A350	HOLLYWOOD/CAHUENGA	12%	8%	(7)	107%	79%	2,071,181	2,265,000	2,867,089	102%
A410	LINE FROM HOLLYWOOD/CAHUENGA TO UNIVERSAL CITY	15%	12.5%	7.5	134%	85%	2,627,160	2,627,000	3,090,588	103%
A415	HOLLYWOOD BOWL	10%	7%	7	113%	89%	2,013,910	2,014,000	2,262,921	101%
A425	UNIVERSAL CITY	10%	8.5%	4.5	N/A	N/A	2,403,180	2,403,000	2,403,000	N/A
A430	LINE FROM UNIVERSAL CITY TO NORTH HOLLYWOOD	15%	16.5%	7.5	142%	116%	1,968,766	1,994,000	1,718,966	97%
A445	NORTH HOLLYWOOD	7%	6.1%	1.6	103%	82%	2,141,868	2,167,000	2,642,682	101%
TOTALS							\$ 52,542,693	\$ 55,749,000	\$ 58,390,984	

\* FOR CONTRACTS TO BE COMPLETED AT MRTC'S FORECAST

-39- MTA LIBRARY

OVERALL CONTRACT ASSESSMENT - COST

The MRTC March Progress Report indicates that 14 out of 18 Section Designers are behind in progress. A common denominator throughout most of these contracts is the failure of the Section Designers to staff the project to their planned manpower. Listed below is a table indicating the results of our analysis.

*erroneous statement.*

<u>Contract #</u>	<u>% Behind Progress Forecast</u>	<u>Net Understaffing to date (Based on 173.3MH/Mo.)</u>	<u>Months into Contract</u>
A135	2.0%	38.7 men	9 months
A140	.5%	16.7 men	9 months
A195	22.0%	26.0 men	8 months
A220	1.0%	38.0 men	6 months
A240	2.0%	13.7 men	2 months
A245	7.2%	38.1 men	6 months
A275	3.0%	13.8 men	3 months
A310	1.5%	20.8 men	4 months
A350	4.0%	9.2 men	3 months
A410	2.5%	23.7 men	3 months
A415	3.0%	1.2 men	2 months
A425	1.5%	1.2 men	2 months
A445	.9%	5.2 men	3 months

*Reporting individual ought to know what is going on on the project. This kind of reporting is in-correct.*

18.9 AVG/Contract





Overall Contract Assessment - Cost (Continued)

Further analysis has indicated a significant increase in the unit cost (\$/per manhour) of work for several of the Section Designers. Listed below is a table indicating our findings.

Contract	Cum. to Date \$/manhour		% Increase	Months into Contract
	Planned	Actual		
A310	52.33	64.62	23%	4 months
A350	48.03	65.71	36%	3 months
A410	57.14	89.53	56%	3 months
A415	50.74	63.42	24%	2 months
A430	49.18	60.42	22%	3 months
A445	47.50	59.62	25%	3 months

*Comparing these to the graphs - we get different picture. In fact it shows that S.D. is understanding compared to their progress!!*

To date there have been no trends issued to cover the above increases to unit costs.

In conclusion, the examples stated in the overall contract assessment-cost for the month of March have never been addressed by the MRTIC in either their contract narratives nor their monthly trend reports. These situations need to be resolved in order to minimize any further cost impact.

FACILITIES DESIGN

As of the status date (3/31/84) all design contracts have been issued Notice to Proceed. Contracts A170, A195 and A220 reflect significant delays during the reporting period.

Most contracts are failing to submit or are submitting partial monthly updates. This continues to be a problem. MRTC Program Control has been notified and is in the process of correcting this situation. The lack of complete updates makes it very difficult to properly assess contract performance.

SYSTEMWIDE

There are no schedules for review available for systemwide contracts. TSD Program Control has requested that MRTC provide baseline and update submittals for monitoring on a monthly basis. All contracts are on schedule with the exception of A650 (Passenger Vehicles).

**CONTRACT STATUS AS OF**

CONTRACT NO.	ON SCHED	LATE	UPDATE NOT SUBMITTED	CONTRACT NO.	ON SCHED	LATE	UPDATE NOT SUBMITTED
A110		7 wks	No	A610	X		
A112		15 wks	No	THRU			
A114		2 wks	No	A618			
A130		11 wks	No	A620	X		
A135		4 wks	No	A630/31	X		
A140		5 wks	Partial	A640	X		
A165	X		No	A650		2 wks	
A170		9 wks	Partial	A660	X		
A195		22 wks	Yes	A670	X		
A220		12 wks	Partial	A710	X		
A240		<i>12 wks</i>	Partial	A720	X		
A245		3 wks	Partial	A740	X		
A250	X		Yes	A760	X		
A275	X		Partial	A750	X		
A310	X		Partial				
A350	X		Yes				
A410	X	1 wk	No				
A415	X		Yes				
A425	X		Yes				
A430	X		Yes				
A445	X		Yes				



RFD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A100 YARD & SHOPS  
 DESIGN CONTRACTOR - DMJM/PBQD

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	58	50
INCREMENTAL PROGRESS %	N/A	6	N/A
COST	4,081,000	5,112,000	2,847,000
MANHOURS	879,000	1,100,000	582,000
CONTRACT DURATION (MONTHS)	16	18	9

$$\begin{aligned} \text{PRODUCTIVITY} &= \% \text{ COMPLETE} \times \text{TOTAL MH FORECAST} \\ \text{CUMULATIVE)} & \quad \frac{\text{MRS. SPENT}}{582,000} = \frac{.50 \times 1,100,000}{582,000} = 94.5\% \end{aligned}$$

$$\begin{aligned} \text{EARNED COSTS} &= \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} \\ \text{(CUMULATIVE)} & = .50 \times 5,112,000 = \$2,556,000 \end{aligned}$$

THIS CONTRACTOR, BEING AT 50% COMPLETE, HAS THEORETICALLY EARNED \$2,556,000.

$$\begin{aligned} \text{COST PERFORMANCE INDEX} &= \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} \\ \text{(CUMULATIVE) - CPI)} & = \frac{2,556,000}{2,847,000} = .90 \end{aligned}$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.90 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\begin{aligned} \text{COST VARIANCE} &= \text{ACTUAL \$ SPENT} - \text{EARNED \$} \\ \text{(CUMULATIVE)} & = 2,847,000 - 2,556,000 = \$ 291,000 \end{aligned}$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$291,000.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A100 YARDS & SHOPS  
 DESIGN CONTRACTOR -DMJM/PBQD

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{2,847,000}{5,112,000} = 55.7 \% \\ \text{(CUMULATIVE)} \end{array}$$

THE CONTRACTOR HAS SPENT 55.7% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 50%.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{5,112,000}{.90} = \$ 5,680,000 \\ \text{(CALCULATED - EAC)} \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$5,680,000. THIS REPRESENTS A COST OVERRUN OF \$1,599,000 OR A 39% INCREASE.

$$\begin{array}{l} \text{TO COMPLETE} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{5,112,000 - 2,556,000}{5,112,000 - 2,847,000} \\ \text{PERFORMANCE INDEX} \end{array} = 113 \%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 113% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE MAJOR CONCERN AT THIS TIME IS THE ACQUISITION OF THE SANTA FE YARD.

05/15/84  
PC-14.20<1>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A110 Yard Clearing, Grading  
DESIGN SUBCONTRACTOR: DMJM/PBQD  
PROJECT MANAGER(TSD/MRTC): Levy/McCauley

AWARD: 07/07/83  
NTP: 07/13/83  
DURATION: 459  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE (CD)
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	11/16/83	-	11/16/83	-
PRE FINAL SUBMITTAL (85%)	01/04/84	-	01/16/84	-
FINAL SUBMITTAL (100%)	02/29/84	04/16/84	-	-47
BID DOCUMENTS	02/29/84	04/16/84	-	-47
TIME OF PERFORMANCE	10/15/84	12/31/84*	-	-77

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Not resolved - As reported in the previous three progress reports, an updated subcontractor's schedule has not been received by TSD Program Control.

AREAS OF CONCERN:

Total slippage to final submittal is 47 days (4/16/84). The slippage is partially due to resources being shifted to contract A112. This slippage will not affect the overall contract because the right-of-way has not been purchased, and NTP cannot be issued as originally scheduled on 5/30/84. Revised schedule for A100 is to be established after right-of-way purchase.

COMMENTS:

\* Per the March MRTC Progress Report, MRTC has forecast a 72-day slippage (12/31/84) of the completion date for contract A100. The reason for the new forecast date is that the subcontractor has claimed design changes since Project Milestone 11, totalling \$1,030,900, which, if approved during pending negotiations, will increase the value of this contract. However, the subcontractor does not have sufficient resources available to complete the work within the present contract duration, which will cause the work to be extended over a longer period.

PERFORMANCE ASSESSMENT:

Subcontractor is currently behind schedule. The Final Submittal (100%) is seven (7) weeks behind schedule.

05/15/84  
PC-14.20<2>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: All2 Yard Building, Utilities and Landscaping  
DESIGN SUBCONTRACTOR: DMJM/PBQD  
PROJECT MANAGER (TSD/MRTC): Levy/McCauley

AWARD: 07/07/83  
NTP: 07/13/83  
DURATION: 459  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	02/01/84	-	01/27/84	-
	-	05/02/84*	-	-
PRE FINAL SUBMITTAL (85%)	03/08/84	06/20/84	-	-104
FINAL SUBMITTAL (100%)	05/23/84	08/15/84	-	- 84
BID DOCUMENTS	05/23/84	08/15/84	-	- 84
TIME OF PERFORMANCE	10/15/84	12/31/84**	-	- 77

\* The subcontractor will be submitting a second In-Progress Submittal (60%) due to redesign of Main Shop Building. The redesign will include the enlargement of the Service & Inspection area and the addition of the transportation function previously included in Contract All3 (now deleted).

\*\* See comments - All0.

COMMENTS:

The forecast dates for the 85% and 100% submittals have slipped an additional 30 days from the previous month's forecast date. The subcontractor is delayed pending District approval of design layout. The MRTC, in the two Design Status Reports covering March, has reported no change in the percent complete for this contract. The reason is the work presently being performed cannot be counted toward the All2 work. These hours are being expended on studies assisting the District to make decisions on the design layout for the Main Shop Building.

Revised forecast dates for construction are not currently available from MRTC. A revised construction schedule will be established after right-of-way purchase.

PERFORMANCE ASSESSMENT:

Subcontractor is currently behind schedule. The revised In-Progress Submittal (60%) is forecast for 5/2/84. The Pre-Final Submittal (85%) is fifteen (15) weeks behind schedule.

05/15/84  
PC-14.20<3>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: All4 Maintenance of Way Building	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: DMJM/PBQD	NTP: 07/13/83
PROJECT MANAGER (TSD/MRTC): Levy/McCauley	DURATION: 459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/13/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	-	-	01/27/84	-
PRE FINAL SUBMITTAL (85%)	04/25/84	05/09/84	-	-14
FINAL SUBMITTAL (100%)	06/13/84	06/27/84	-	-14
BID DOCUMENTS	06/13/84	06/27/84	-	-14
TIME OF PERFORMANCE	10/15/84	12/31/84*	-	-77

\* See comments - All0

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The District has directed MRTC to have the subcontractor proceed with design on the Maintenance of Way Building as of March 29, 1984.

The scheduled dates have been changed to reflect the current status of All4 at the time of approval of All4 as an early contract.

#### COMMENTS:

Forecast dates for construction are not available from MRTC. A revised schedule for All30 will be established after right-of-way purchase.

#### PERFORMANCE ASSESSMENT:

Subcontractor is currently behind schedule. The Pre-Final Submittal (85%) is two weeks behind schedule.

05/15/84  
PC-14.20<4>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A130 Line Subway to Union Station	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: DMJM/PBQD	NTP: 07/07/83
PROJECT MANAGER (TSD/MRTC): Levy/McCauley	DURATION: 459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	03/07/84	05/16/84	-	-77
PRE FINAL SUBMITTAL (85%)	05/02/84	07/11/84	-	-70
FINAL SUBMITTAL (100%)	06/27/84	09/05/84	-	-70
BID DOCUMENTS	06/27/84	09/05/84	-	-70
TIME OF PERFORMANCE	10/15/84	12/31/84*	-	-77

\* See comments - A110

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Resolved - For several months the subcontractor has been impacted pending approval of conceptual design by Caltrans. At a meeting (March 1, 1984) and in written confirmation, Caltrans stated that the proposed design concept is satisfactory. The subcontractor is now proceeding with design work.

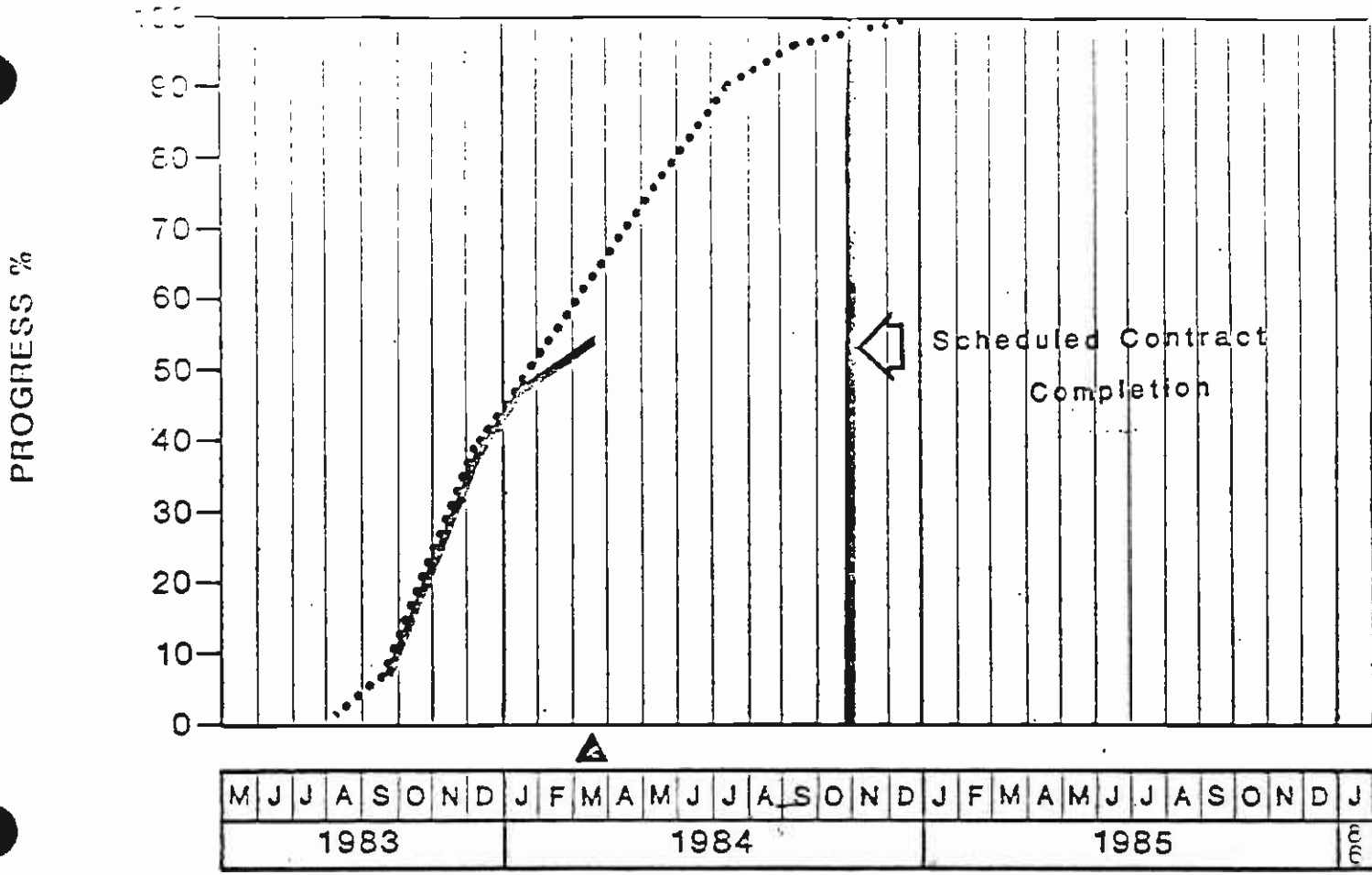
#### COMMENTS:

The forecast date for the In-Progress Submittal (60%) has not slipped from the previous month's forecast date. The subcontractor remains eleven (11) weeks behind schedule. Revised forecast dates for construction are not available from MRTC. A revised schedule for A130 will be established after right-of-way purchase.

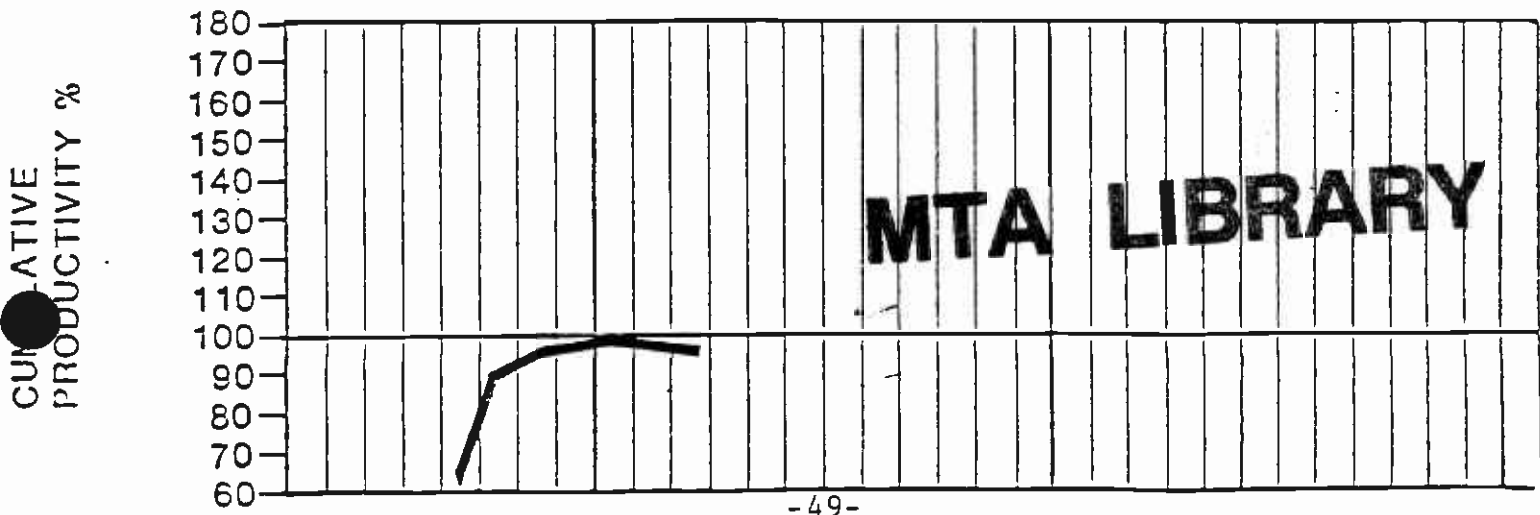
#### PERFORMANCE ASSESSMENT:

Subcontractor is currently behind schedule. The In-Progress Submittal (60%) is eleven (11) weeks behind schedule.

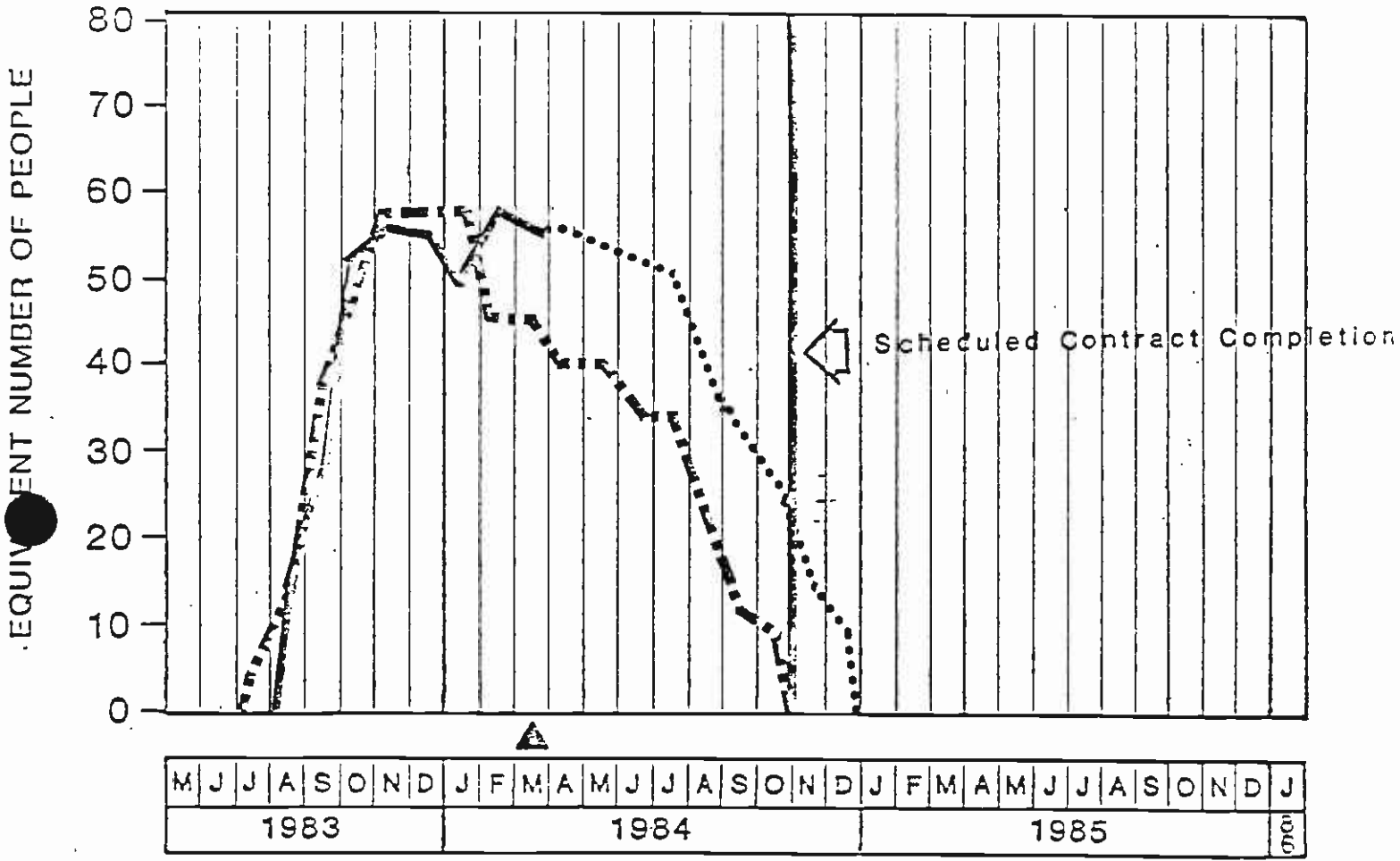







MRTC REPORT	PLANNED	NOT AVAILABLE																			
	ACTUAL		0	5	15	25	35	43	N/A	50											
	FORECAST		2	5	15	25	35	43	52	58	67	73	78	84	89	92	95	98	100		



### MANPOWER PLAN



PLANNED   
FORECAST   
ACTUAL 

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A135 - UNION STATION  
 DESIGN CONTRACTOR - HARRY WEESE AND ASSOCIATES (HWA)

COMMENTS ON MRTC PROGRESS REPORT

0 NO DISCUSSION OF PROBLEM AREAS.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	60	58
INCREMENTAL PROGRESS	N/A	15	3
COST	2,897,000	2,968,000	1,451,000
MANHOURS	55,900	57,300	30,900
CONTRACT DURATION	13	13	9

$$\begin{aligned} \text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} &= \frac{.58 \times 57,300}{30,900} = 1.08 \\ \text{(CUMULATIVE)} \end{aligned}$$

$$\begin{aligned} \text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} &= .58 \times 2,968,000 = \$1,721,440 \\ \text{(CUMULATIVE)} \end{aligned}$$

THIS CONTRACTOR, BEING AT 58% COMPLETE, HAS THEORETICALLY EARNED \$1,721,440.

$$\begin{aligned} \text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} &= \frac{1,721,440}{1,451,000} = 1.19 \\ \text{(CUMULATIVE) - CPI} \end{aligned}$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.19 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\begin{aligned} \text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} &= 1,451,000 - 1,721,440 = \$ (270,440) \\ \text{(CUMULATIVE)} \end{aligned}$$

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$270,440.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A135 - UNION STATION  
DESIGN CONTRACTOR - HARRY WEESE & ASSOCIATES

---

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{1,451,000}{\text{FORECAST AT COMPLETION} = 2,968,000} = 49\%$$

THE CONTRACTOR HAS SPENT 49% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 58%.

---

$$\begin{array}{l} \text{EST. AT COMPLETION} = \text{FORECAST AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{2,968,000}{\text{COST PERFORMANCE INDEX} = 1.19} = \$2,494,118$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,494,118. THIS REPRESENTS A COST UNDERRUN OF \$402,882 OR A 14% DECREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,968,000 - 1,721,440}{2,968,000 - 1,451,000} = 82\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 82% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

---

CONCLUSION

THE CONSULTANT CONTINUES TO PROJECT A COST UNDERRUN. PRODUCTIVITY IS CONTINUING TO DROP, THOUGH IT IS STILL IN EXCESS OF 100%, YET THE CONTRACTOR IS BEHIND IN PROGRESS. AS MORE OF THE DISTRICT-IMPOSED HOLDS AND OTHER RESTRAINING FACTORS ARE RELEASED, WE SHOULD SEE INCREASED PROGRESS BEING MADE.

05/15/84  
PC-14.20<5>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A135 Union Station  
DESIGN SUBCONTRACTOR: Harry Weese & Associates  
PROJECT MANAGER (TSD/MRTC): Low/Cooper

AWARD: 07/07/83  
NTP: 07/13/83  
DURATION: 365  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/05/83	-
IN PROG. SUBMITTAL (60%)	02/01/84	-	03/09/84	-
PRE FINAL SUBMITTAL (85%)	04/01/84	05/01/84	-	-30
FINAL SUBMITTAL (100%)	06/01/84	06/24/84	-	-23
BID DOCUMENTS	07/18/84	07/18/84	-	0
TIME OF PERFORMANCE	07/12/84	06/24/84	-	+18

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The 60% design has been submitted to MRTC and a design review meeting was held on 3/30/84. Structural and electrical drawings are behind schedule. Subcontractor has employed additional structural personnel.

AREAS OF CONCERN:

The subcontractor's CPM schedule and Monthly Progress Reports have not been received by TSD Program Control. This has been a continuing concern.

COMMENTS:

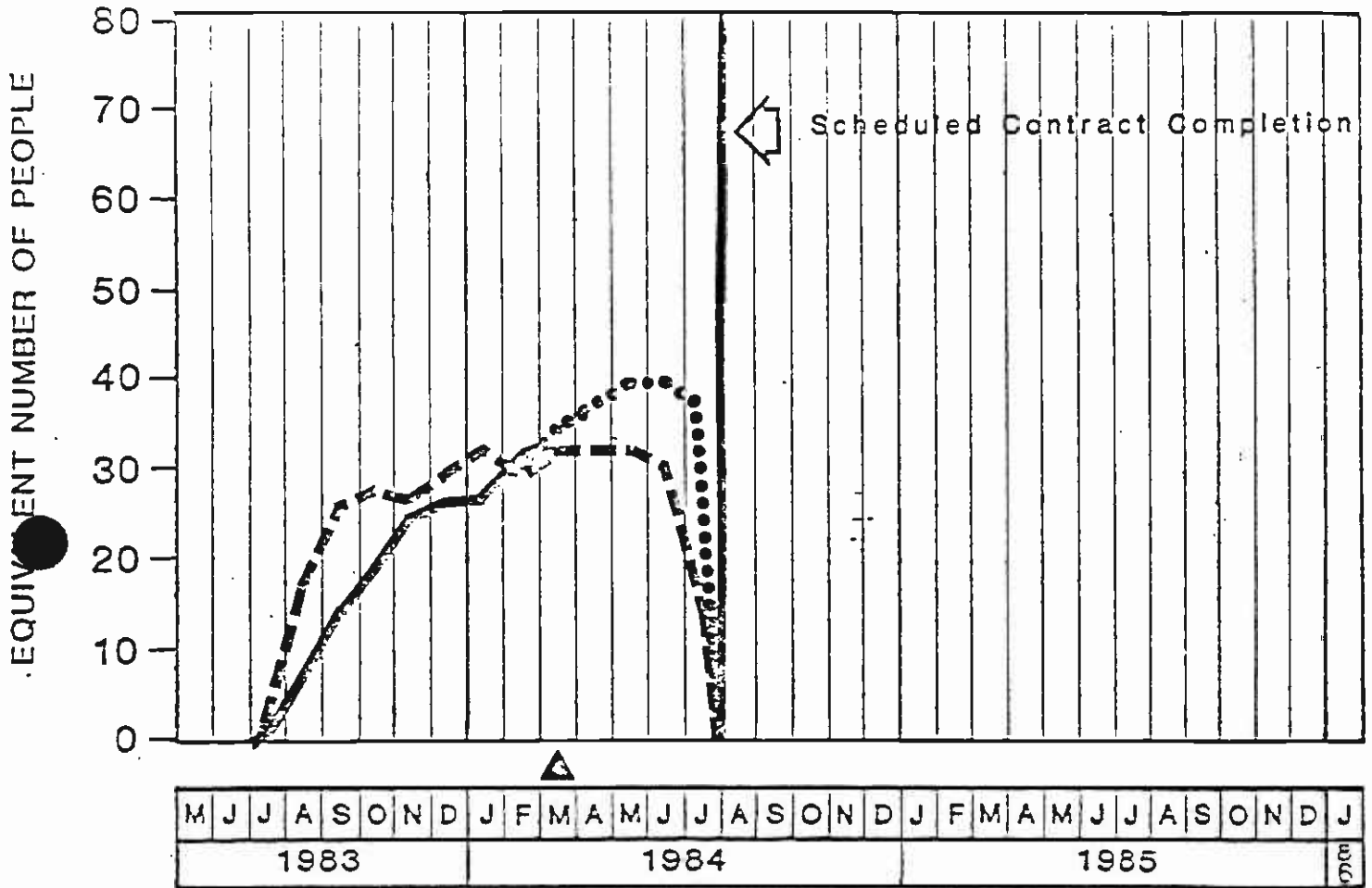
Design will be split into two construction contracts (Stage I-Structural and Stage II - Finish). The above schedule reflects Stage I at this time.

PERFORMANCE ASSESSMENT:

Currently progress is approximately four weeks behind schedule due to numerous changes to design configuration and interface with LACTC Light Rail System.



### MANPOWER PLAN



PLANNED - - - - -  
FORECAST .....  
ACTUAL - - - - -

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A140 CIVIC CENTER/5TH & HILL STATIONS  
DESIGN CONTRACTOR - DELON HAMPTON & ASSOCIATES (DHA)

COMMENTS ON MRTIC PROGRESS REPORT

o NONE.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	25	24.5
INCREMENTAL PROGRESS %	N/A	5	4.5
COST	6,204,000	6,210,000	1,644,000
MANHOURS	110,300	110,400	31,900
CONTRACT DURATION (MONTHS)	25	25	9

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST  
(CUMULATIVE)  $\frac{\quad}{\text{MHRS. SPENT}} = \frac{.245 \times 110,400}{31,900} = 0.85$

PRODUCTIVITY IS UP THREE POINTS FROM LAST MONTH (82% TO 85%), BUT IT STILL NEEDS IMPROVEMENT.

EARNED COSTS = % COMPLETE X TOTAL COST FORECAST = .245 X 6,210,000 = \$ 1,521,450  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 24.5% COMPLETE, HAS THEORETICALLY EARNED \$1,521,450.

COST PERFORMANCE INDEX = EARNED COSTS  
(CUMULATIVE) - CPI  $\frac{1,521,450}{\text{ACTUAL COSTS SPENT}} = \frac{1,521,450}{1,644,000} = 0.93$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$0.93 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. UP \$0.04 FROM FEBRUARY.

COST VARIANCE = ACTUAL \$ SPENT - EARNED \$ = 1,644,000 - 1,521,450 = \$122,550  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 122,550.



COST ANALYSIS  
(CONTINUED)

CONTRACT # - A140 CIVIC CENTER/5TH & HILL STATIONS  
DESIGN CONTRACTOR - DELON HAMPTON & ASSOCIATES

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \backslash \text{(CUMULATIVE)} \end{array} \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,644,000}{6,210,000} = 26 \%$$

THE CONTRACTOR HAS SPENT 26% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 24.5%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{6,210,000}{0.93} = \$6,677,419$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$6,677,419. THIS REPRESENTS A COST OVERRUN OF \$473,419 OR AN 8% INCREASE/DECREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{6,210,000 - 1,521,450}{6,210,000 - 1,644,000} = 103\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 103% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

THE PRODUCTIVITY AND COST PERFORMANCE INDEX CONTINUE TO FALL BELOW 100%, AS A RESULT, THE CONTRACTOR IS REPORTED TO BE JUST SLIGHTLY BEHIND (0.5%) IN PROGRESS. THIS CONTRACTOR APPEARS TO BE ABLE TO MAINTAIN PROGRESS AT CONSIDERABLY LESS THAN 100% PRODUCTIVITY (85%). DHA HAS SIXTEEN MONTHS TO RAISE THE PRODUCTIVITY TO A MORE SATISFACTORY LEVEL.

05/15/84  
PC-14.20<6>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: Al40 Line & Stage I Civic Center & 5th/Hill	AWARD: 07/25/83
DESIGN SUBCONTRACTOR: Delon Hampton & Associates	NTP: 07/27/83
PROJECT MANAGER(TSD/MRTC): Louis/Yacoub	DURATION: 730 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/17/83	-	10/26/83	-
IN PROG. SUBMITTAL (60%)	08/01/84	08/01/84	-	0
PRE FINAL SUBMITTAL (85%)	03/01/85	03/01/85	-	0
FINAL SUBMITTAL (100%)	06/10/85	06/10/85	-	0
BID DOCUMENTS	07/15/85	07/15/85	-	0
TIME OF PERFORMANCE	07/27/85	06/10/85	-	+57

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Subcontractor now has a full-time Project Manager.

AREAS OF CONCERN:

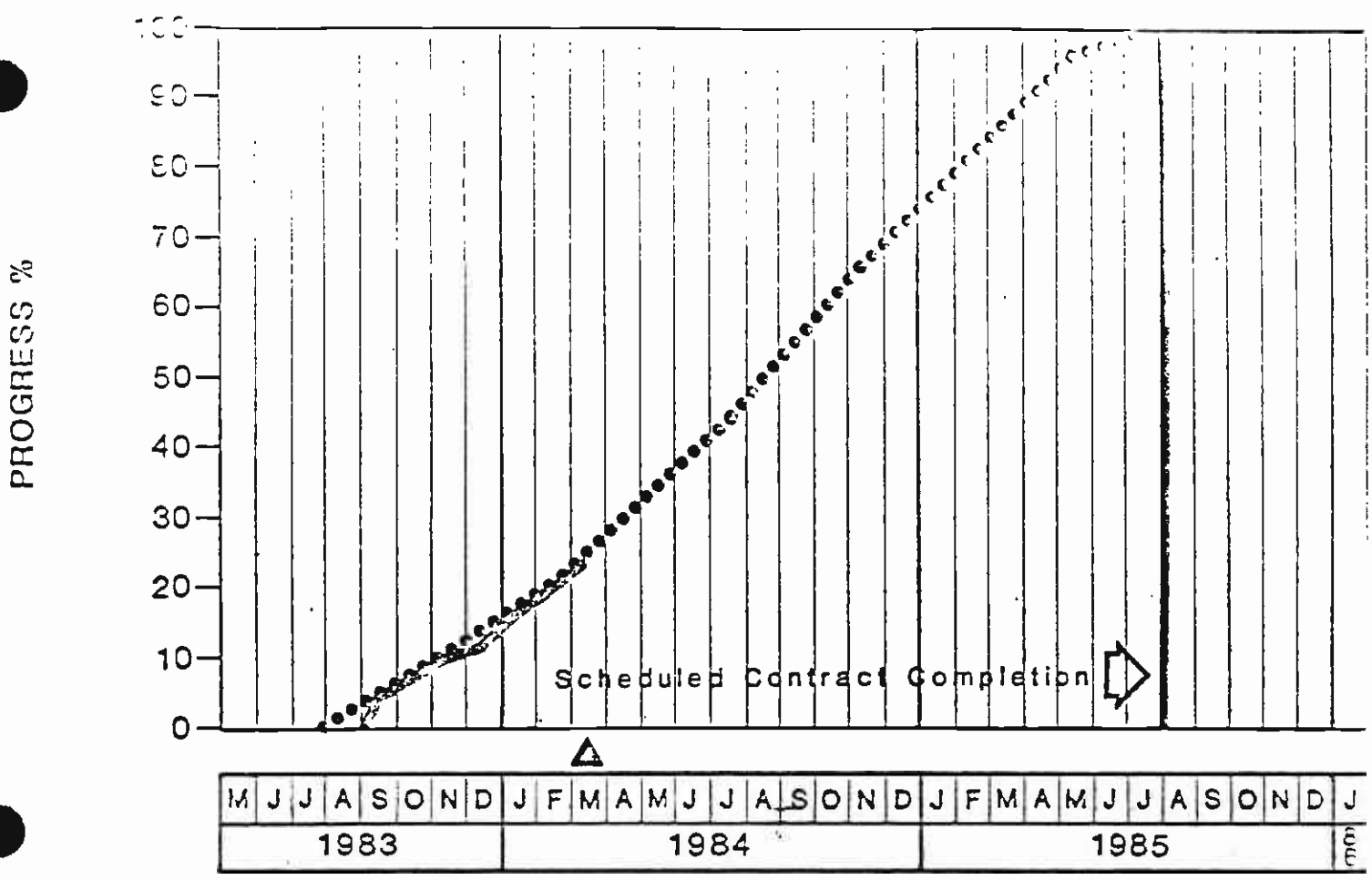
Lack of decision to California Plaza entrance at 4th & Hill Street has impacted all disciplines for the 5th/Hill Station drawings. To avoid delay to the Final Submittal (100%) a decision must be made by June 1984.

COMMENTS:

Consultant needs traffic maintenance requirements from the City.

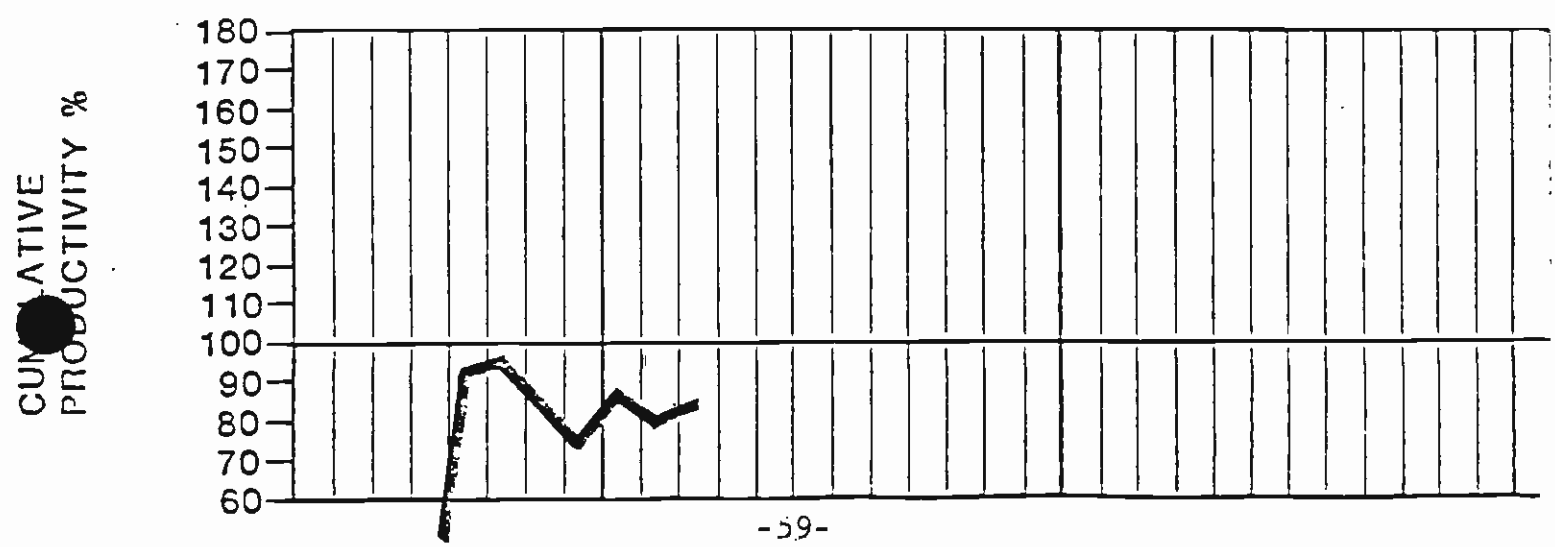
PERFORMANCE ASSESSMENT:

Currently the overall project is about five weeks behind schedule. The MRTC Project Manager expects the In-Progress Submittal (60%) to be on time.

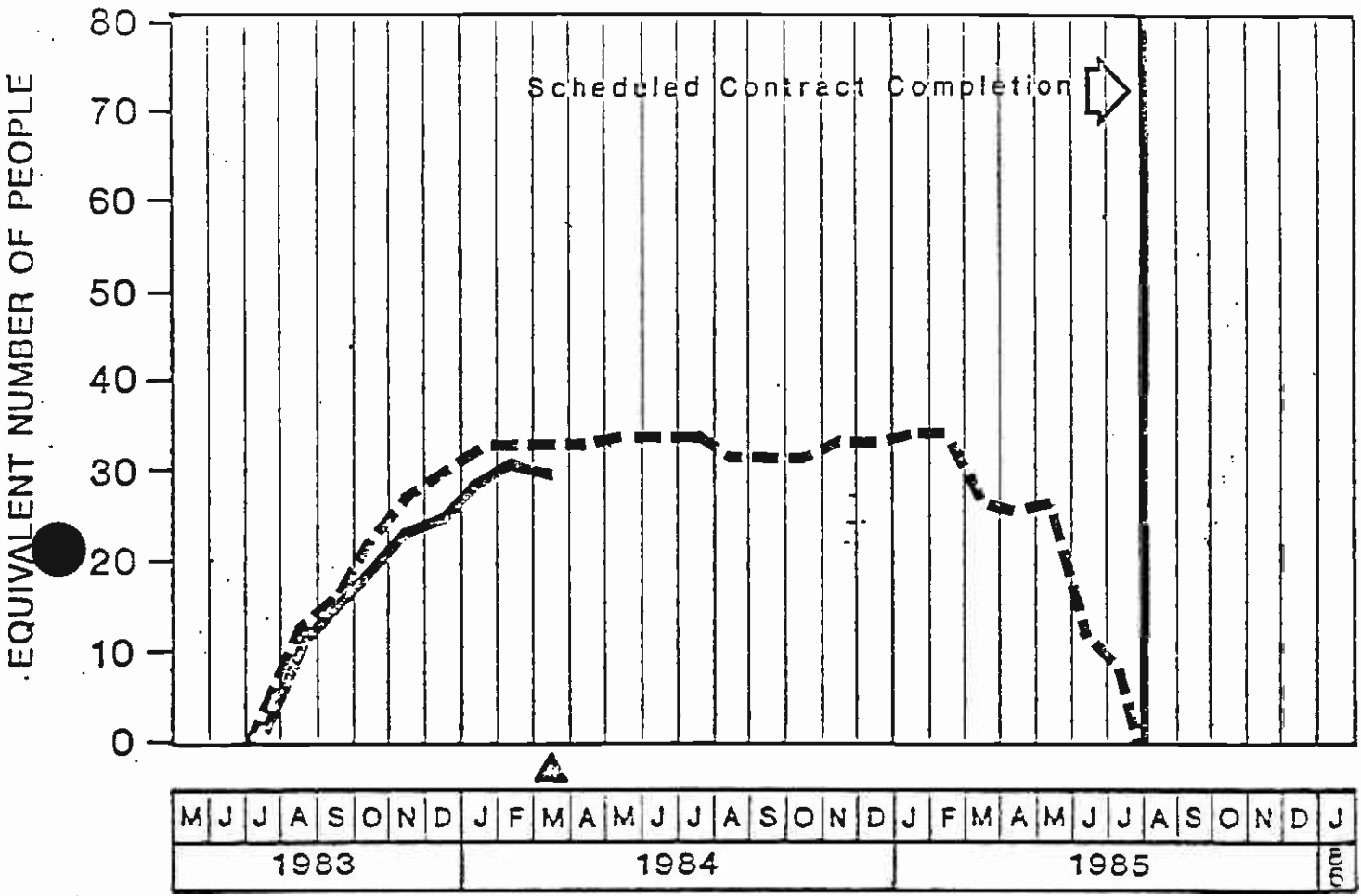


MRTC REPORT

PLANNED																																				
ACTUAL			N/A	4.5	7.5	10	9.6	13	11.5	17	17	20	20	24.5																						
FORECAST			0	2.5	4.5	7.5	10	13	17	17	20	20	24.5	30	35	40	45	50	55	60	65	70	75	80	86	92	95	98	100							



### MANPOWER PLAN



PLANNED

FORECAST NOT AVAILABLE

ACTUAL

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A165 7TH/FLOWER STATION  
DESIGN CONTRACTOR - GANNETT FLEMING/DWORSKY

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COMMENTS ON MRTIC PROGRESS REPORT

o NONE

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DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	50	54
INCREMENTAL PROGRESS %	N/A	5	4
COST	2,387,000	2,445,000	1,161,000
MANHOURS	58,500	59,900	31,000
CONTRACT DURATION (MONTHS)	12	15	8

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$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MTRS. SPENT}} = \frac{.54 \times 59,900}{31,000} = 1.04$$

THE PRODUCTIVITY HAS COME DOWN TO A MORE REASONABLE LEVEL FROM LAST MONTH'S FIGURE OF 1.45.

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$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .54 \times 2,445,000 = \$ 1,320,300$$

THIS CONTRACTOR, BEING AT 50% COMPLETE, HAS THEORETICALLY EARNED \$1,320,300.

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$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,320,300}{1,161,000} = 1.14$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 1.14 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS CPI IS DOWN FROM LAST MONTHS'S FIGURE OF \$ 1.44.

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$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,611,000 - 1,320,300 = \$159,300$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$159,300.

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COST ANALYSIS  
(CONTINUED)

CONTRACT # - A165 7TH/FLOWER STATION  
DESIGN CONTRACTOR - GANNETT FLEMING/DWORSKY

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,161,000}{2,445,000} = 47\%$$

THE CONTRACTOR HAS SPENT 47% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 54%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,445,000}{1.14} = \$ 2,144,737$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,144,737. THIS REPRESENTS A COST UNDERRUN OF \$242,263 OR A 10% DECREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,445,000 - 1,320,300}{2,445,000 - 1,161,000} = 88\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 88% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

THE CONSULTANT IS REPORTING GOOD PRODUCTIVITY AND COST PERFORMANCE, ALTHOUGH AT A REDUCED RATE FROM LAST MONTH. WORK IS PROGRESSING ON A SATISFACTORY BASIS.

THE LIGHT RAIL INTERFACE REQUIREMENTS ARE STILL BEING DEFINED AT THIS TIME.

**MTA LIBRARY**

05/15/84  
PC-14.20<7>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A165 7th & Flower Station	AWARD: 04/28/83
DESIGN SUBCONTRACTOR: Gannett Fleming/Dworsky	NTP: 08/09/83
PROJECT MANAGER (TSD/MRTC): Low/Cooper	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/30/83	-	10/17/83	-
IN PROG. SUBMITTAL (60%)	02/07/84	-	03/12/84	-
PRE FINAL SUBMITTAL (85%)	05/22/84	05/15/84	-	+07
FINAL SUBMITTAL (100%)	08/07/84	08/14/84	-	-07
BID DOCUMENTS	10/14/84	10/14/84	-	0
TIME OF PERFORMANCE	08/08/84	08/14/84	-	-06

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The In-Progress (60%) submittal was made on 3/12/84 and a design review meeting is scheduled for early April 1984.

Overtime work is being utilized to attain the 85% level of design by mid-May 1984.

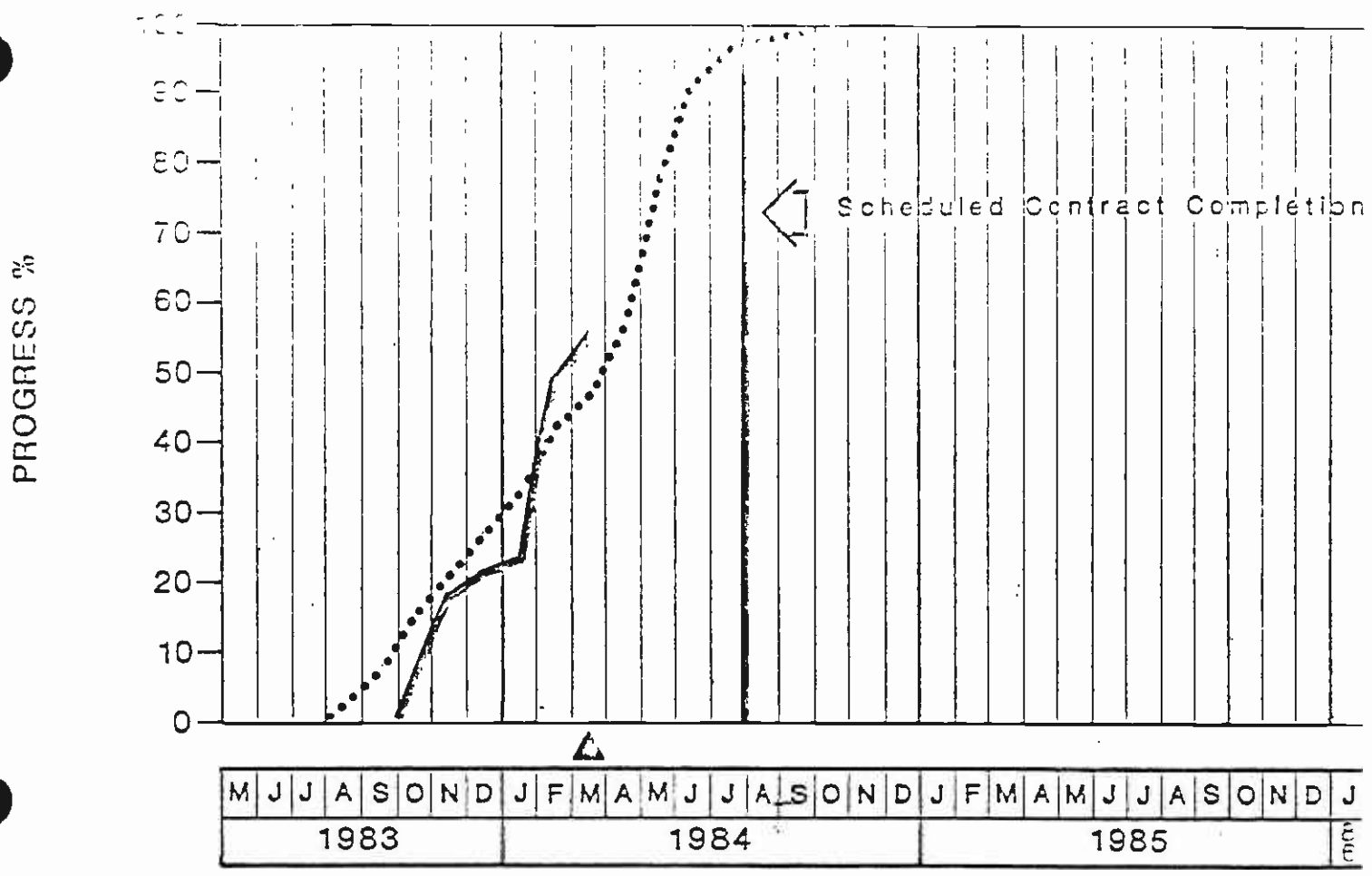
AREAS OF CONCERN:

To date, TSD Program Control has not received the subcontractor's Monthly Progress Report, updated CPM Schedule and Design Control Register.

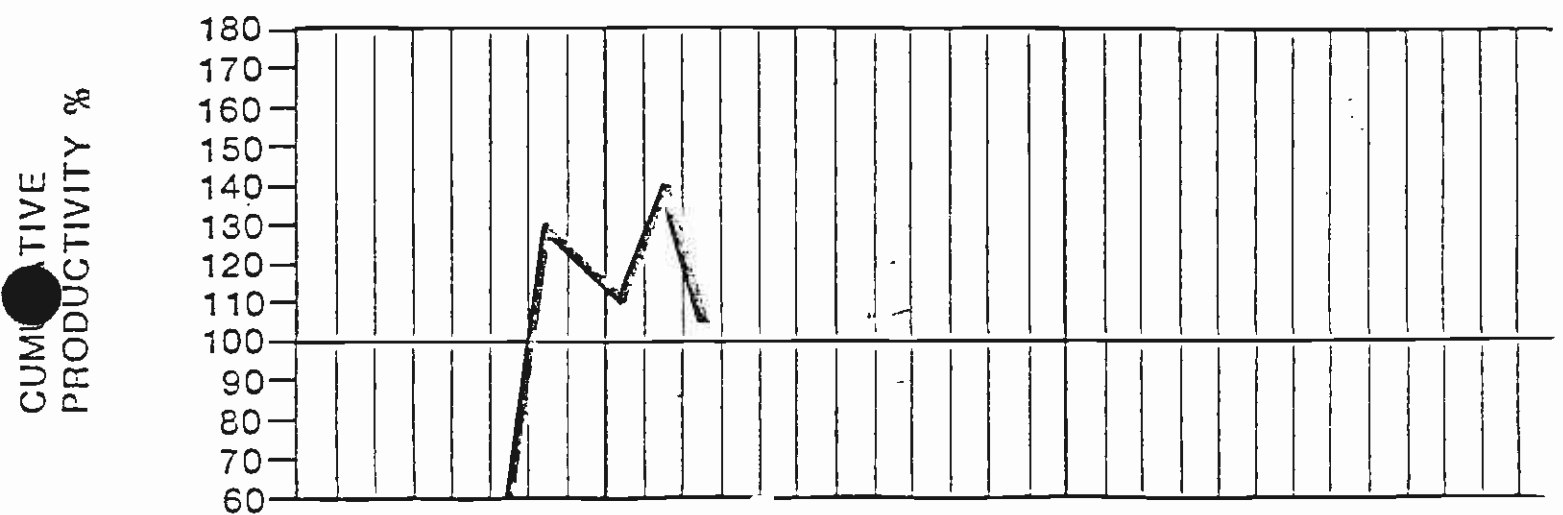
A potential six month delay to the bid documents may result, if the LACTC requirements for LRT station design is added to the subcontractor's scope of work.

PERFORMANCE ASSESSMENT:

An assessment of performance cannot be determined until the subcontractor's Monthly Progress Report is received.

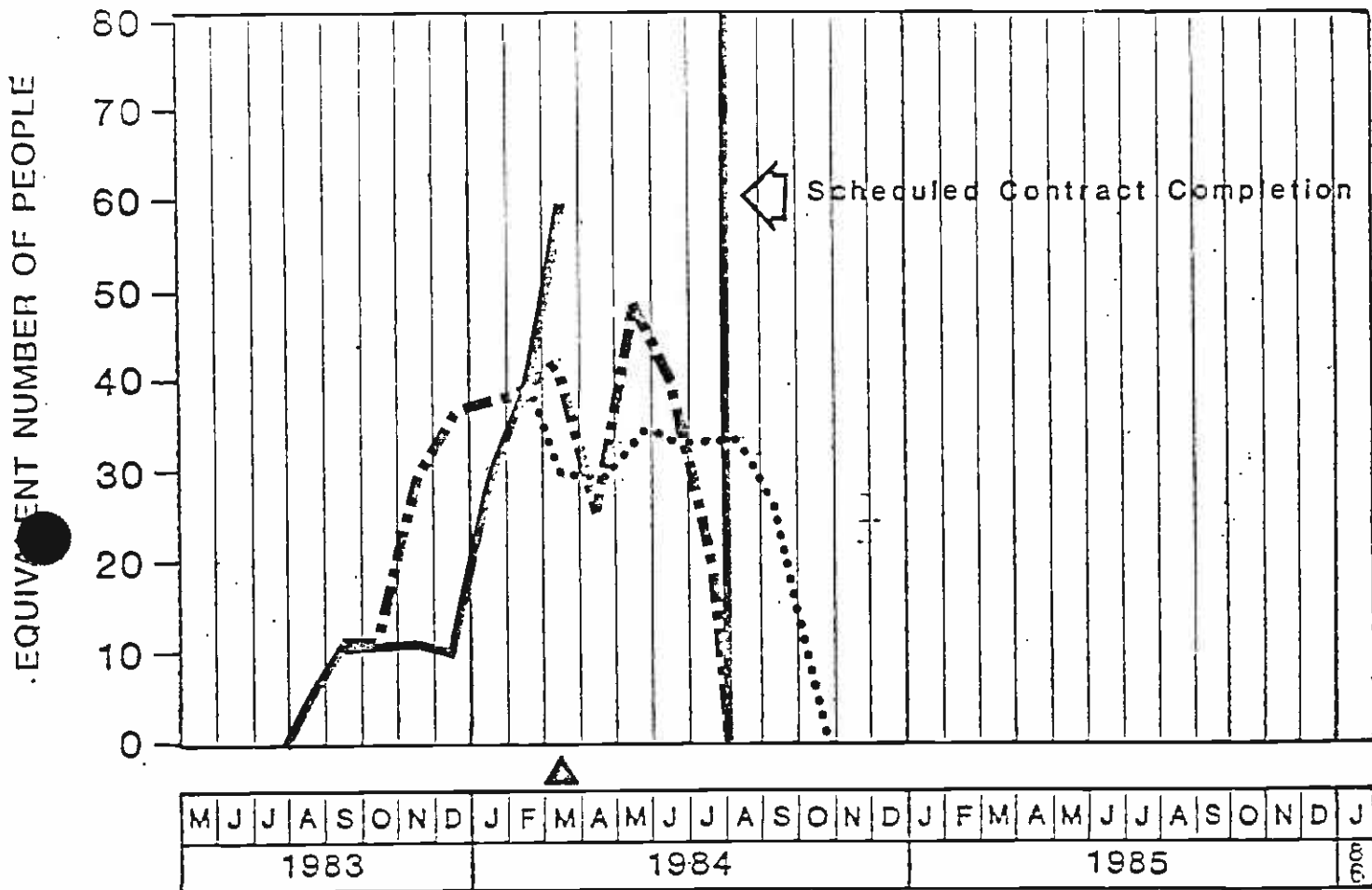


MRTC REPORT	PLANNED																			
	ACTUAL				5	20	22	25	50	54										
	FORECAST		3	8	15	20	27	35	45	50	55	60	90	95	97	99	100			





### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A170 WILSHIRE/ALVARADO STATION  
 DESIGN CONTRACTOR - SVERDRUP CORPORATION

COMMENTS ON MRTC PROGRESS REPORT

- o STAGE II MILESTONE SUBMITTALS SHOW THE PRE-FINAL SUBMITTAL OCCURRING BEFORE THE IN-PROGRESS SUBMITTAL.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	45	50
INCREMENTAL PROGRESS	N/A	10	10
COST	3,119,000	3,400,000	1,547,000
MANHOURS	59,800	65,200	28,000
CONTRACT DURATION (MONTHS)	17	17	8

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.50 \times 65,200}{28,000} = 1.16$$

THE CONSULTANT IS CONSISTENTLY REPORTING GOOD PRODUCTIVITY WHICH IS REFLECTED THROUGHOUT THE COST ANALYSIS.

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .50 \times 3,400,000 = \$ 1,700,000$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 50% COMPLETE, HAS THEORETICALLY EARNED \$1,700,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,700,000}{1,547,000} = 1.09$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.09 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,547,000 - 1,700,000 = \$ 153,000$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$153,000.

COST ANALYSIS  
(CONTINUED)

CONTRACT # = A170 WILSHIRE/ALVARADO STATION  
DESIGN CONTRACTOR = SVERDRUP CORPORATION

---

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,547,000}{3,400,000} = 46\%$$

THE CONTRACTOR HAS SPENT 46% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 50%.

---

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{3,400,000}{1.09} = \$ 3,119,266$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,119,266. THIS REPRESENTS A COST OVERRUN OF \$266 OR A 0% INCREASE.

---

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{3,400,000 - 1,700,000}{3,400,000 - 1,547,000} = 92\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 92% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST. THIS RATIO REFLECTS ALL OF THE PRIOR COST ANALYSES.

---

CONCLUSION

THE CONSULTANT IS REPORTING FAVORABLE PROGRESS BOTH IN SCHEDULE AND COST, YET THE SCRIPD PROJECT MANAGER HAS REVEALED THAT THE CONSULTANT IS ACTUALLY BEHIND SCHEDULE. THIS CONTRADICTION NEEDS TO BE ADDRESSED.

05/15/84  
PC-14.20<8>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A170 Wilshire/Alvarado Station	AWARD: 04/28/83
DESIGN SUBCONTRACTOR: Sverdrup & Parcel Assocs.	NTP: 08/09/83
PROJECT MANAGER (TSD/MRTC): Thakarar/Hodges	DURATION: 485 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
<b>STAGE I</b>				
CONTROL SYSTEM SUBMITTAL	08/23/83	---	09/19/83	---
IN PROG. SUBMITTAL (60%)	02/14/84	---	02/16/84	---
PRE FINAL SUBMITTAL (85%)	05/30/84	07/13/84	---	-44
FINAL SUBMITTAL (100%)	08/14/84	08/27/84	---	-13
BID DOCUMENTS	09/26/84	09/24/84	---	+ 2
<b>STAGE II</b>				
IN PROG. SUBMITTAL (60%)	04/02/84	05/04/84	---	-32
PRE FINAL SUBMITTAL (85%)	07/25/84	08/09/84	---	-15
FINAL SUBMITTAL (100%)	11/02/84	10/29/84	---	+ 3
BID DOCUMENTS	12/28/84	11/29/84	---	+29
TIME OF PERFORMANCE	12/07/84	10/29/84	---	+39

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

TSD decided to maintain the current horizontal alignment and not include the pocket track west of the station.

At the design review meeting held 3/9/84 the In Progress Submittal was determined to be at 40% design completion.

#### AREAS OF CONCERN:

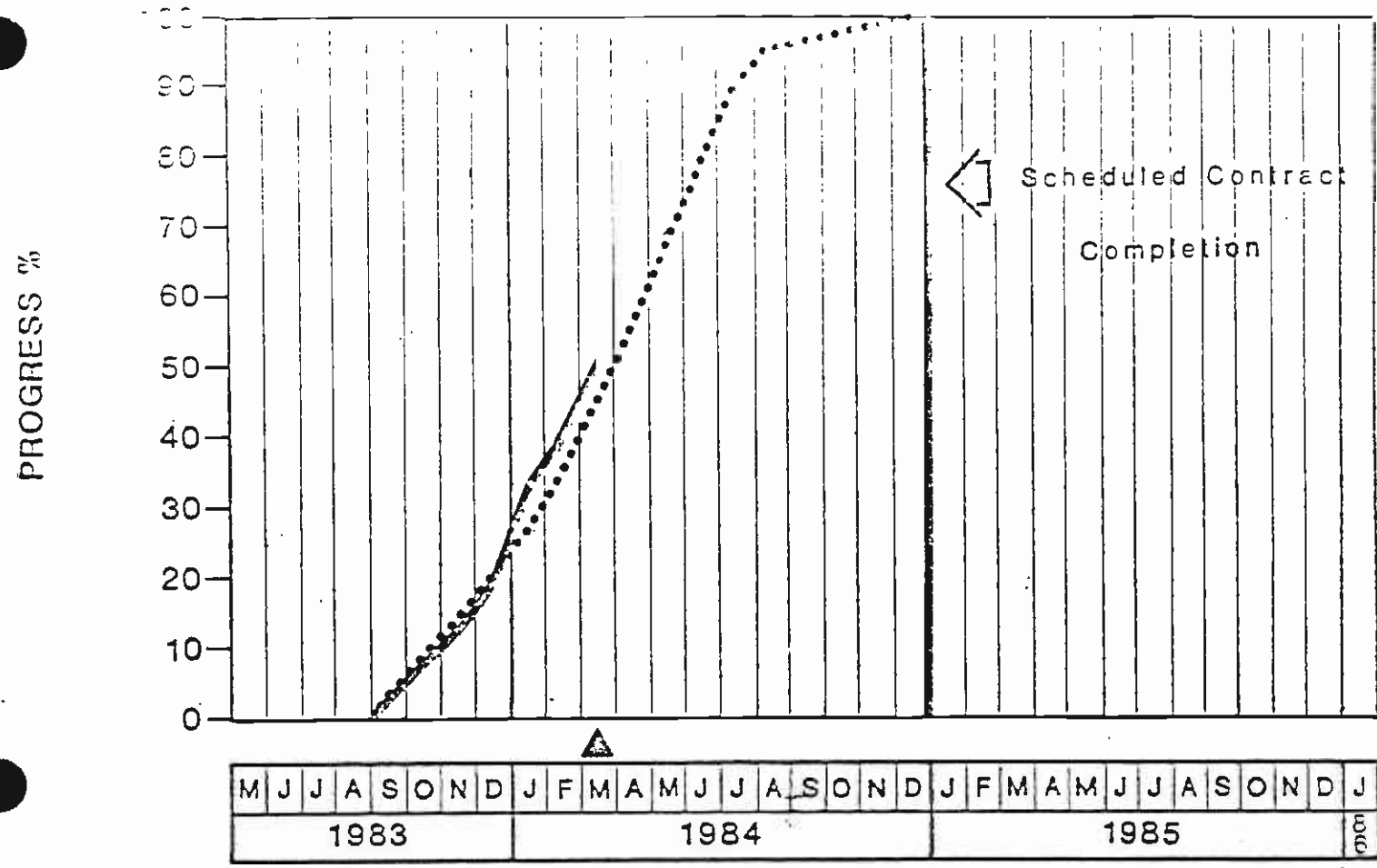
Lack of and continuing changes to the standard drawings from MRTC may cause potential delay to design.

#### COMMENTS:

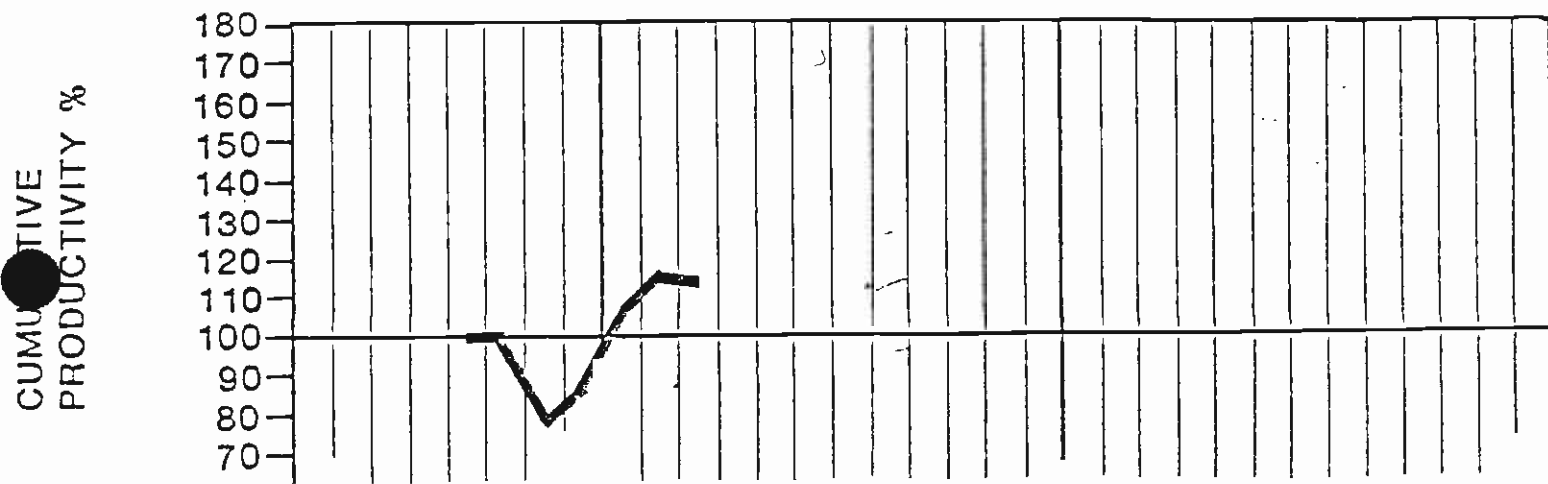
The station is too near the surface to allow widening of Alvarado Street and proper grading at Plaza. Subcontractor will be evaluating alternative verticle alignments.

#### PERFORMANCE ASSESSMENT:

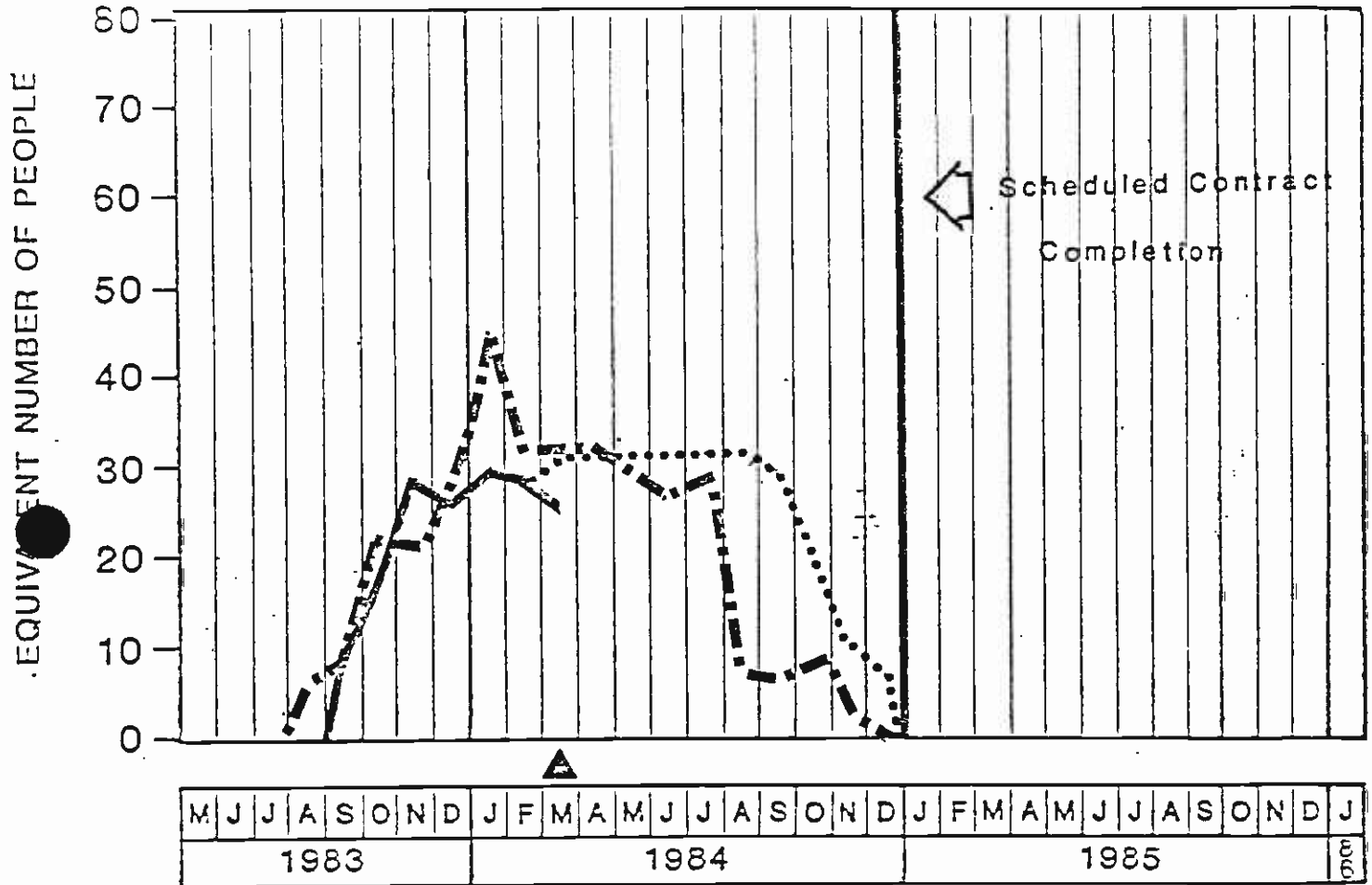
Current design progress is approximately 9 weeks behind schedule. Slippage to the In-Progress Submittal is due to changes made to the ancillary configuration over the crossover east of the station. These directives were issued in time to be incorporated into the current submittal.



MRTC REPORT	PLANNED	NOT AVAILABLE																													
	ACTUAL	0	3	8	12.5	20	32	40	50																						
	FORECAST	5	10	15	20	27	35	45	55	70	80	87	93	95	97	99	100														



MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A195 WILSHIRE/VERMONT STATION  
 DESIGN CONTRACTOR - KOBER/MAGUIRE

COMMENTS ON MRIC PROGRESS REPORT

- o NO DISCUSSION ON THE FOLLOWING ITEMS:
  - oo THE 1 MONTH STEP IN CONTRACT COMPLETIONS
  - oo INCREASE OF FORECAST TO COMPLETION COST
  - oo PROBLEM AREAS
  
- o THE MRIC NARRATIVE DOES NOT DETAIL IMPACTS TO COST AND ORIGINAL SCOPE OF WORK.

DATA REPORTED BY MRIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	62	40
INCREMENTAL PROGRESS %	N/A	10	2
COST	1,541,000	2,135,000	920,000
MANHOURS	33,900	46,900	197,000
CONTRACT DURATION (MONTHS)	13	14	8

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{40 \times 46,900}{19,700} = 95$$

PRODUCTIVITY HAS INCREASED SIGNIFICANTLY (82-95).

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .40 \times 2,135,000 = \$ 854,000$$

THIS CONTRACTOR, BEING AT 40% COMPLETE, HAS THEORETICALLY EARNED \$854,000 BUT HAS BEEN PAID \$920,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{854,000}{920,000} = .93$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$0.93 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS IS A SATISFACTORY CPI.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 920,000 - 854,000 = \$ 66,000$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$66,000/8%.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A195 WILSHIRE/VERMONT STATION  
 DESIGN CONTRACTOR - KOBER/MAGUIRE

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \quad \underline{\hspace{2cm}} \quad = \quad \frac{920,000}{2,135,000} \quad = \quad 43 \% \\ \text{FORECAST AT COMPLETION} \end{array}$$

THE CONTRACTOR HAS SPENT 43% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 40%. THIS ISN'T BAD WHEN MEASURED AGAINST FORECAST BUT, IF MEASURED AGAINST THE ORIGINAL BUDGET THE CONTRACTOR HAS SPENT 60% OF THE TOTAL BUDGET.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \text{FORECAST AT COMPLETION} \\ \text{(CALCULATED - EAC)} \quad \underline{\hspace{2cm}} \quad = \quad \frac{2,135,000}{\hspace{2cm}} \quad = \quad \$ 2,295,698 \\ \text{COST PERFORMANCE INDEX} \quad \hspace{10em} .93 \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,295,698. THIS REPRESENTS A COST OVERRUN OF \$160,618 OR AN 8% INCREASE FROM PRESENT FORECAST; BUT A \$754,698 INCREASE FROM PLANNED BUDGET.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,135,000 - 854,000}{2,135,000 - 920,000} = 92\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 92% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST. THIS IS A REASONABLE CPI, NEEDED TO MEET THE PRESENT FORECAST-TO-COMPLETION COST.

CONCLUSION

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05/15/84  
PC-14.20<9>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A195 Wilshire/Vermont Station	AWARD: 04/28/83
DESIGN SUBCONTRACTOR: Kober/Maguire	NTP: 08/12/83
PROJECT MANAGER(TSD/MRTC): Taylor/Stickel	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/29/83	-	09/19/83	-
IN PROG. SUBMITTAL (60%)	02/07/84	08/14/84	02/10/84*	-188
PRE FINAL SUBMITTAL (85%)	05/22/84	11/13/84	-	-165
FINAL SUBMITTAL (100%)	08/07/84	01/27/84	-	-173
BID DOCUMENTS	09/19/84	02/27/84	-	-161
TIME OF PERFORMANCE	08/11/84	01/27/84	-	-169

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The In-Progress submittal (2/10/84) was determined by TSD Transit Facilities Department to be at 38% design completion. The subcontractor expects to reach a 60% level of design completion by 08/14/84.

#### AREAS OF CONCERN:

The subcontractor's early finish schedule is reflected in the forecasted dates above. Proposed corrective actions are required to establish a recovery plan.

Directives for seismic requirements will impact the schedule.

#### COMMENTS:

Current standard and directives have been issued by MRTC.

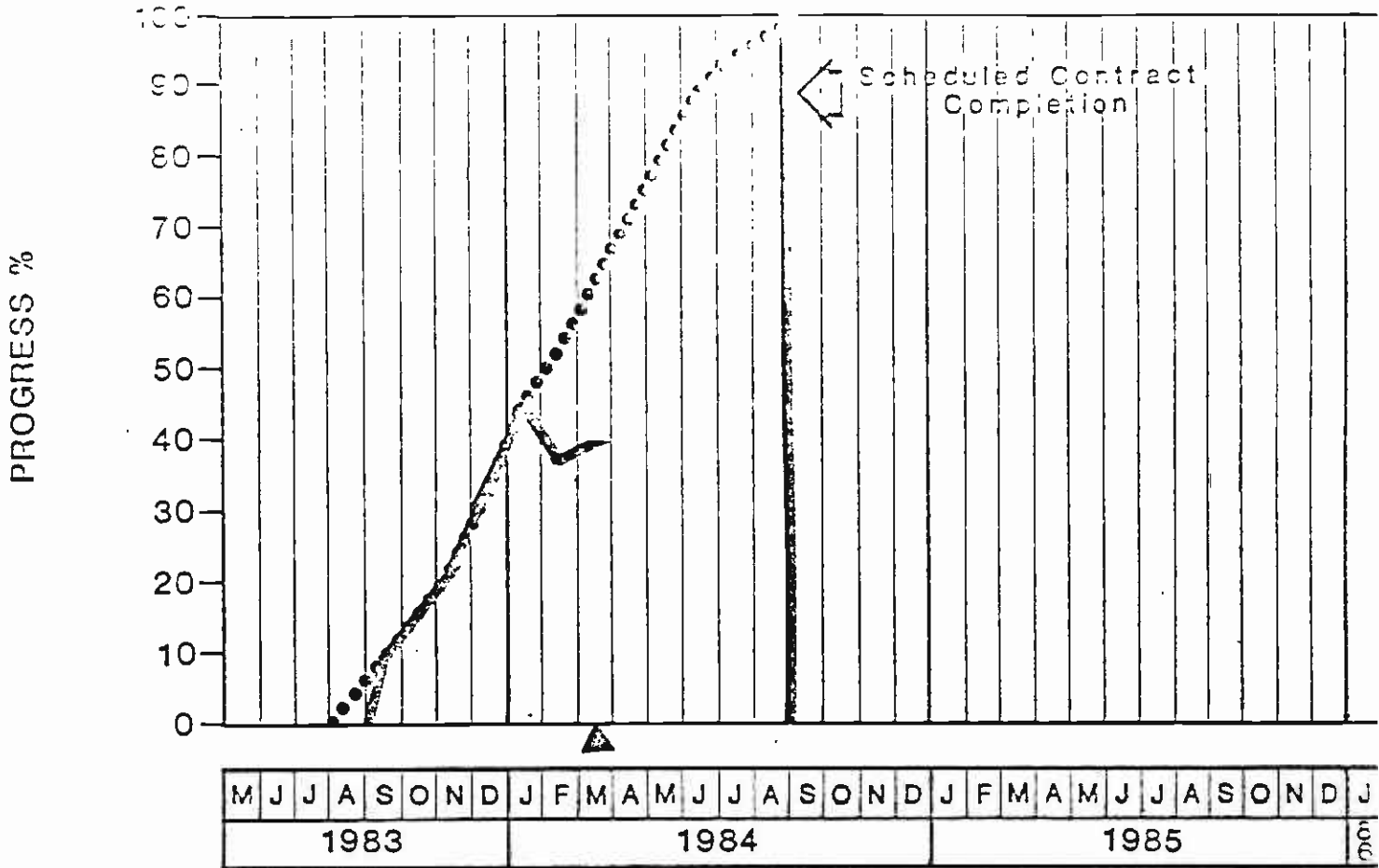
#### PERFORMANCE ASSESSMENT:

The final design is forecasted to complete approximately 22 weeks behind schedule. Delay is due to numerous changes to the Standard and Directive Drawings.

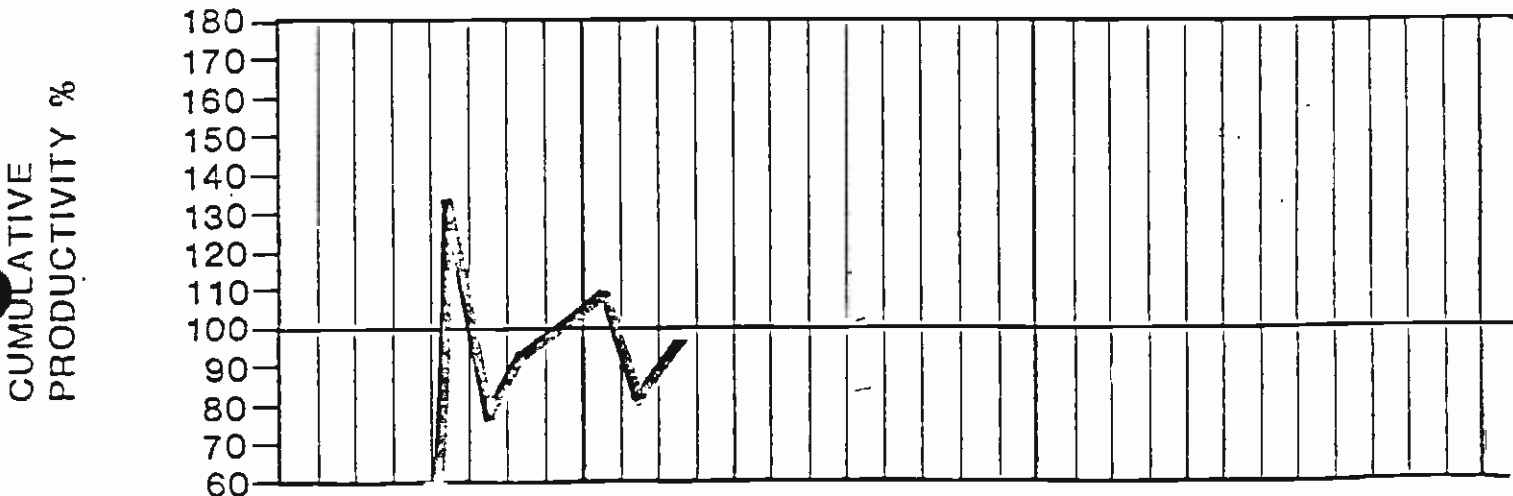
DESCRIPTION WILSHIRE/VERMONT STATION

SECTION DESIGNER KOBER/MAGUIRE

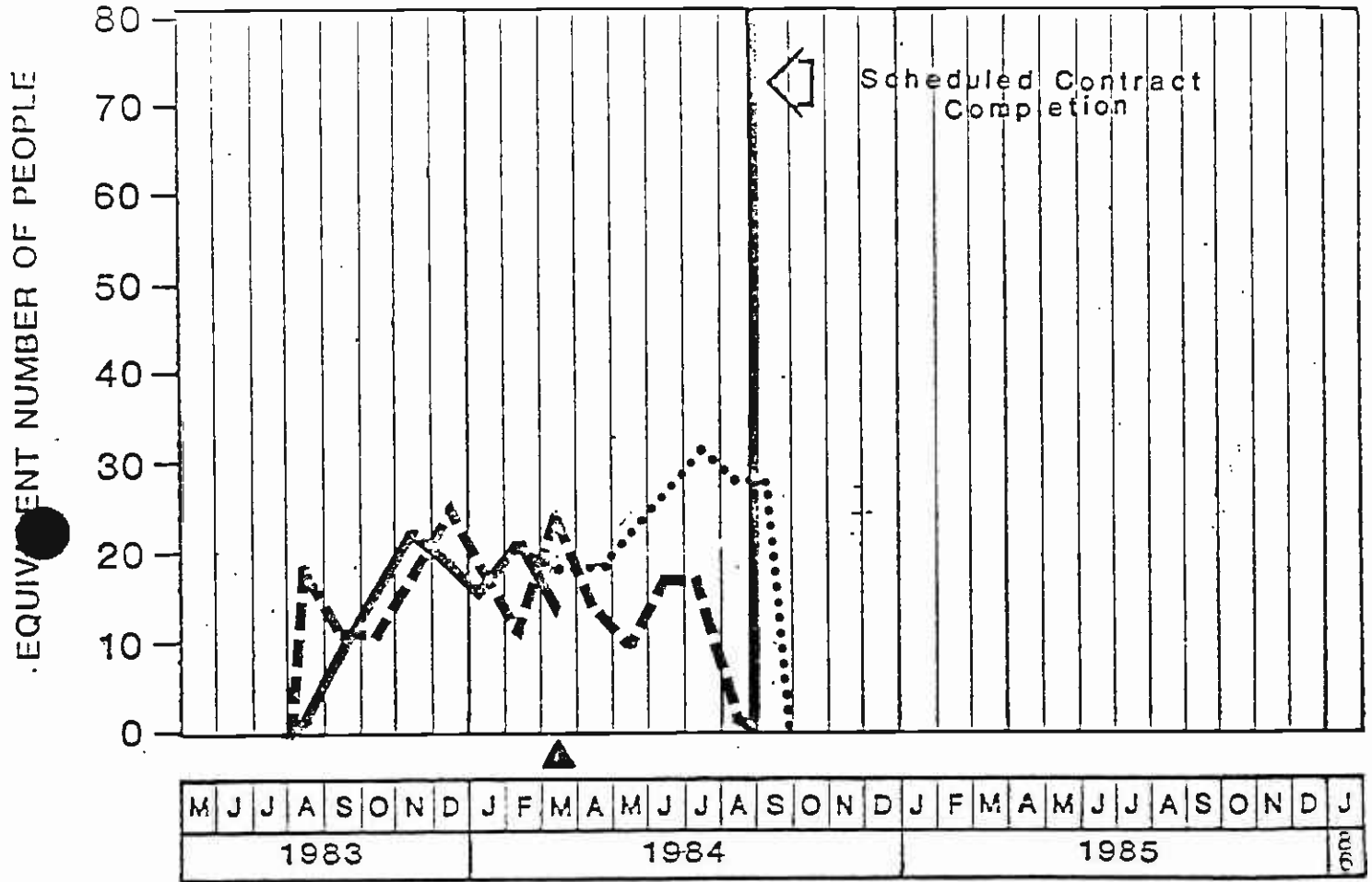
MRTC	PLAN	.....
PROGRESS	ACTUAL	.....
REPORT	FORECAST	.....



DI- WEEKLY REPORT	PLANNED					19	19	27	35	45	55																						
	ACTUAL					19	22	30	45	38																							
MRTC REPORT	PLANNED	NOT AVAILABLE																															
	ACTUAL					8	10	22	33	45	38	40																					
	FORECAST			3	8	15	22	33	45	52	62	72	80	90	95	98	100																



MANPOWER PLAN



PLANNED ————  
 FORECAST .....  
 ACTUAL ————

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A220 WILSHIRE/ NORMANDIE AND WILSHIRE/WESTERN  
DESIGN CONTRACTOR - TUDOR/PEREIRA

---

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

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DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	13	12
INCREMENTAL PROGRESS %	N/A	3	2
COST	4,677,000	4,828,000	627,000
MANHOURS	790,000	815,000	101,000
CONTRACT DURATION (MONTHS)	25	22	6

---

$$\begin{array}{l} \text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \text{TOTAL MH FORECAST} \\ \text{(CUMULATIVE)} \end{array} = \frac{\begin{array}{l} .12 \\ \text{MTRS. SPENT} \end{array} \times \begin{array}{l} 815,000 \\ 101,000 \end{array}}{\begin{array}{l} 815,000 \\ 101,000 \end{array}} = 96.8\%$$

---

$$\begin{array}{l} \text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} \\ \text{(CUMULATIVE)} \end{array} = .12 \times 4,828,000 = \$ 579,360$$

THIS CONTRACTOR, BEING AT 12% COMPLETE, HAS THEORETICALLY EARNED \$ 579,360.

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$$\begin{array}{l} \text{COST PERFORMANCE INDEX} = \text{EARNED COSTS} \\ \text{(CUMULATIVE)} - \text{CPI} \end{array} = \frac{579,360}{627,000} = .92$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.92 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

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$$\begin{array}{l} \text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} \\ \text{(CUMULATIVE)} \end{array} = 627,000 - 579,360 = \$ 47,640$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$47,640.

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COST ANALYSIS  
(CONTINUED)

CONTRACT # - A220 WILSHIRE/NORMANDIE AND WILSHIRE/WESTERN  
DESIGN CONTRACTOR -TUDOR/PEREIRA

---

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{627,000}{4,828,000} = 13\%$$

THE CONTRACTOR HAS SPENT 13% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 12%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{4,828,000}{.92} = \$ 5,247,826$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$5,247,826. THIS REPRESENTS A COST OVERRUN OF \$570,826 OR A 12% INCREASE.

---

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{4,828,000 - 579,360}{4,828,000 - 627,000} = 101\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 101% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

RID PROJECT MANAGER IS SATISFIED WITH THIS CONTRACT'S PERFORMANCE ASSESSMENT. CONTRACT IS PROGRESSING STEADILY WITHOUT ANY PROBLEMS THAT WOULD IMPACT COSTS AT THIS TIME.

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

Page 1 of 3

DESIGN CONTRACT: A220-Line Section & Stage I  
at Normandie & Western

AWARD: 10/10/83

DESIGN SUBCONTRACTOR: Tudor/Pereira

NTP: 10/10/83

PROJECT MANAGER (TSD/MRTC): Bilco/Bejay

DURATION: 730  
(CALENDAR DAYS)

TUNNEL MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	10/24/83	2/25	10/24/83	-
IN PROG. SUBMITTAL (60%)	03/12/84	05/28/84	-	-87
PRE FINAL SUBMITTAL (85%)	04/30/84	07/16/84	-	-87
FINAL SUBMITTAL (100%)	06/11/84	09/17/84	-	-98
BID DOCUMENTS	06/03/85	06/03/85	-	-
TIME OF PERFORMANCE	07/01/85	07/01/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The final Soils Report was given to the subcontractor, and the tunnel design is now progressing.

AREAS OF CONCERN:

The information regarding the existing foundation of buildings between Vermont and Normandie is pending (MRTC).

The mid-tunnel vent shaft location has been received by the subcontractor, configuration is still under study (MRTC).

COMMENTS:

New forecast dates show that the Final Submittal for the tunnel portion will slip three months.

Architectural presentation for Western and Normandie Stations was presented to the Board of Directors on March 1, 1984.

The Monthly Update received from the subcontractor did not include the Critical Path Network, Engineering Changes, and a revised Network Analysis.

PERFORMANCE ASSESSMENT:

The tunnel portion of the contract is twelve weeks behind schedule; all other work is on schedule. The slippage is due to the lack of the soils report from MRTC to the subcontractor.

05/15/84  
PC-14.20<11>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

Page 2 of 3

DESIGN CONTRACT: A220-Line Section & Stage I  
at Normandie & Western

AWARD: 10/10/83

DESIGN SUBCONTRACTOR: Tudor/Pereira

NTP: 10/10/83

PROJECT MANAGER(TSD/MRTC): Bilco/Bejau *W*

DURATION: 730  
(CALENDAR DAYS)

WILSHIRE/WESTERN  
MAJOR MILESTONES      SCHEDULED      FORECAST      ACTUAL      VARIANCE

CONTROL SYSTEM SUBMITTAL	10/24/83	-	10/24/83	-
IN PROG. SUBMITTAL (60%)	08/06/84	08/06/84	-	-
PRE FINAL SUBMITTAL (85%)	11/05/84	11/05/84	-	-
FINAL SUBMITTAL (100%)	02/04/85	02/04/85	-	-
BID DOCUMENTS	10/28/85	10/28/85	-	-
TIME OF PERFORMANCE	10/07/85	10/07/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

AREAS OF CONCERN:

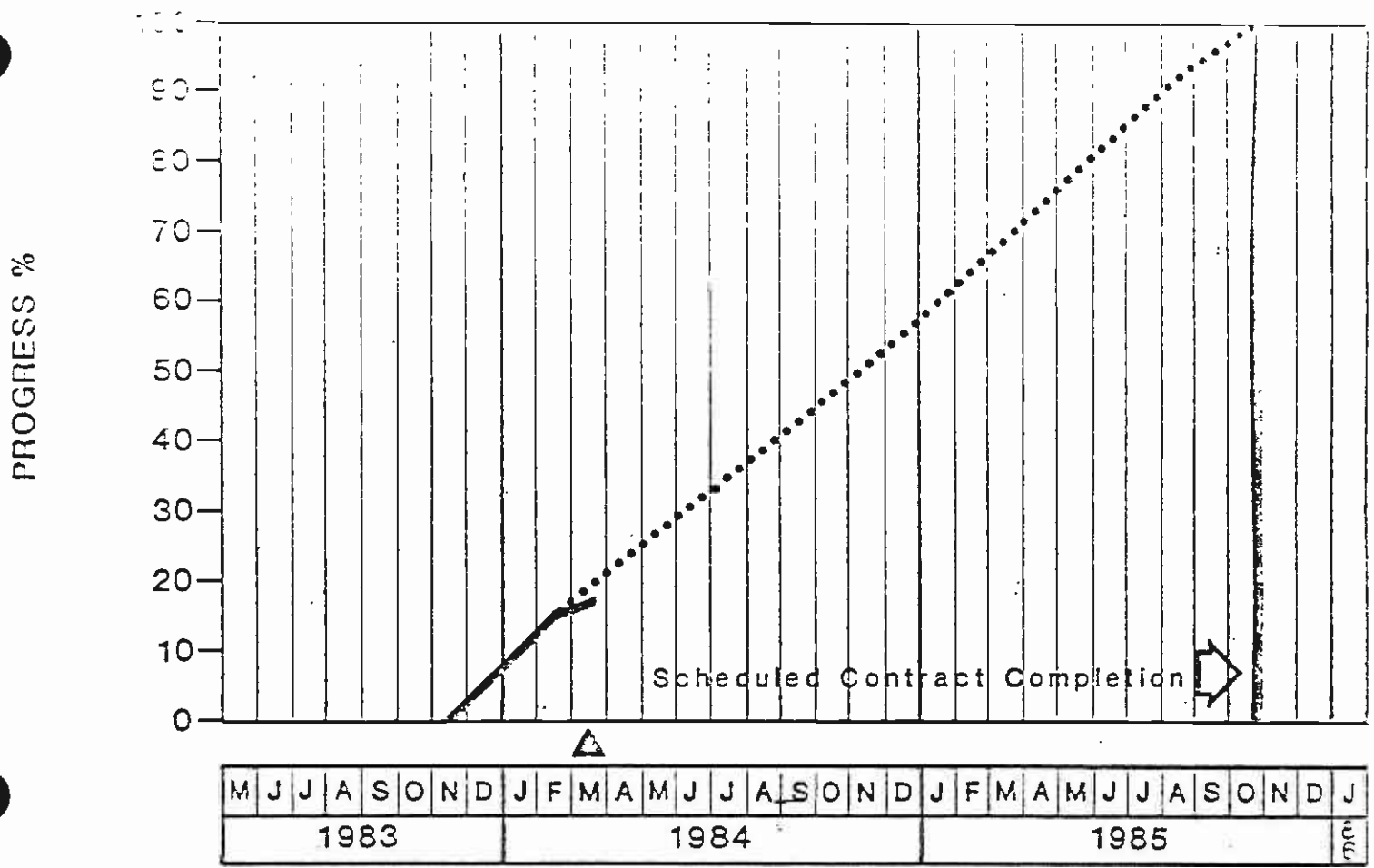
See Comments on Page One (Tunnel Section) of Contract A220

COMMENTS:

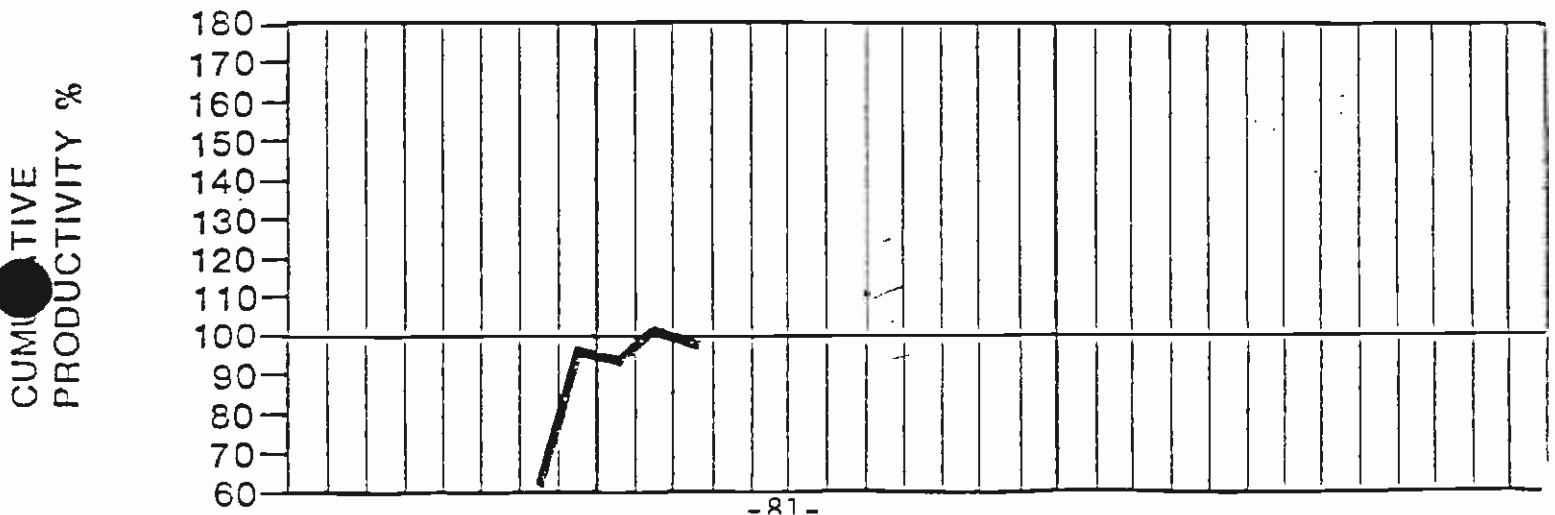
PERFORMANCE ASSESSMENT:



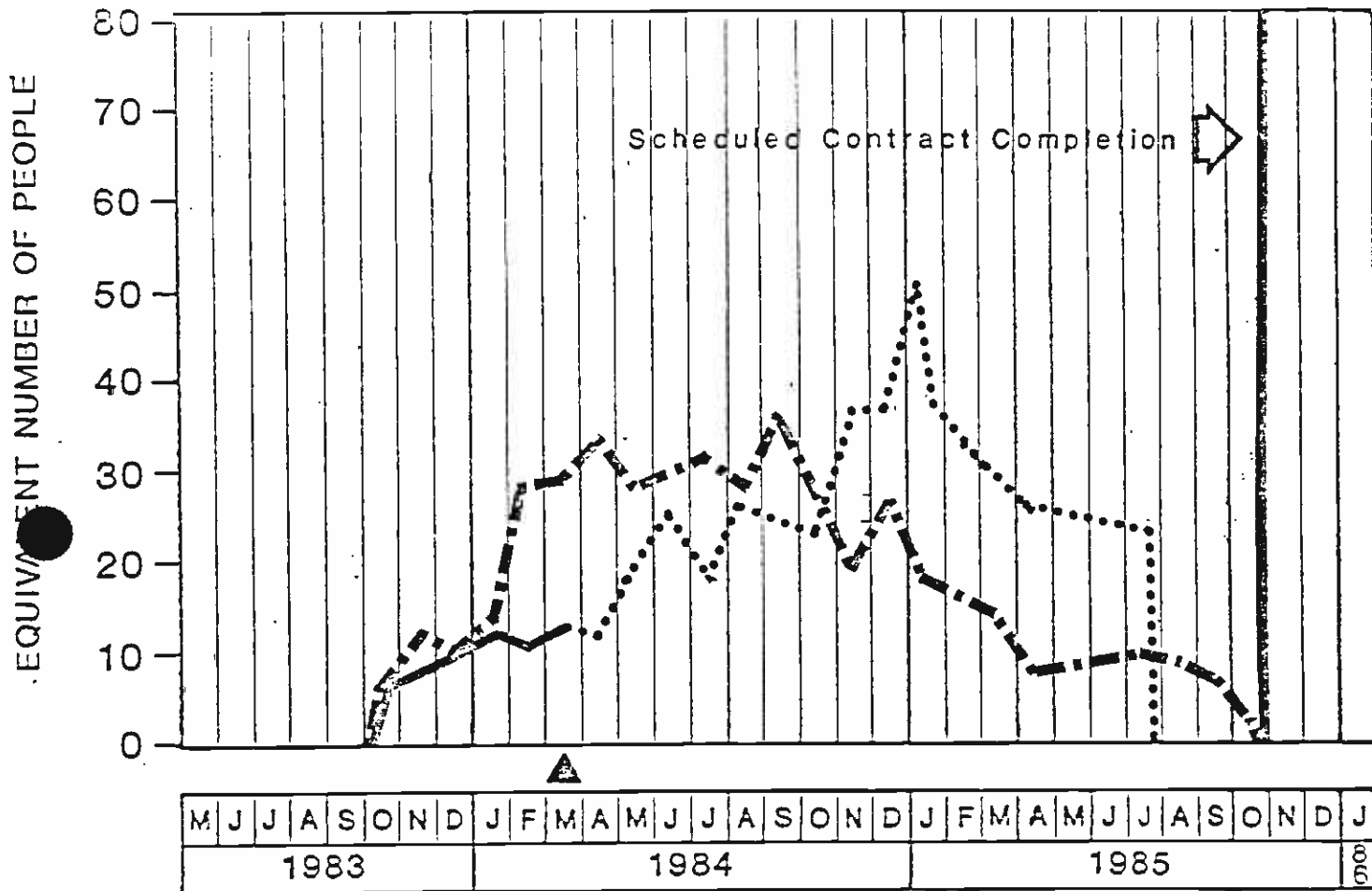




MRTC REPORT	PLANNED	NOT AVAILABLE																														
	ACTUAL				1	5	7	10	12																							
	FORECAST				1	5	7	10	13	17	22	26	30	35	40	47	54	60	65	70	77	82	85	90	93	96	98	100				



### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A240 WILSHIRE/CRENSHAW  
DESIGN CONTRACTOR - TURNER/CHANG

---

COMMENTS ON MRTIC PROGRESS REPORT

- o NO DISCUSSION ON THE FOLLOWING ITEMS:
  - oo REASONS FOR INCREASE IN FORECAST-TO-COMPLETION COST (VARIES FROM LAST MONTH).
  - oo PROBLEM AREAS
  - oo INCREASE OF LABOR HOURS

---

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	10	10	8
INCREMENTAL PROGRESS	5	5	7
COST	2,395,000	2,635,000	226,000
MANHOURS	44,600	49,000	4,200
CONTRACT DURATION	12	13	2

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CONCLUSION

NOTICE TO PROCEED WAS ISSUED ON 01/27/84                      MAKING IT TOO EARLY TO EVALUATE PROGRESS.

AREAS OF CONCERN:

THIS CONTRACT IS ONLY 2 MONTHS OLD, HOWEVER THE MRTIC HAS ALREADY SLIPPED THE CONTRACT ONE MONTH AND INCREASED THE FORECAST-TO-COMPLETION TWICE (FEBRUARY & MARCH).

FOR A CONTRACT BEING SO NEW, CHANGES THAT OCCUR IN THIS STAGE SHOULD BE ABLE TO BE IMPLEMENTED WITH EASE BECAUSE NO REDESIGN WORK IS NEEDED.

05/15/84  
PC-14.20<12>

### SUBCONTRACTOR EVALUATION

#### SCHEDULE ANALYSIS STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A240 Wilshire/Crenshaw Station  
DESIGN SUBCONTRACTOR: Turner/Chang  
PROJECT MANAGER (TSD/MRTC): Bilco/Tallet

AWARD: 01/18/84  
NTP: 01/27/84  
DURATION: 366  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	02/16/84		03/12/84	-
IN PROG. SUBMITTAL (60%)	07/16/84	07/16/84	-	-
PRE FINAL SUBMITTAL (85%)	10/22/84	10/22/84	-	-
FINAL SUBMITTAL (100%)	01/14/85	01/14/85	-	-
BID DOCUMENTS	02/14/85	02/14/85	-	-
TIME OF PERFORMANCE	01/26/85	01/26/85	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The problem mentioned last period remains unresolved (resolution of site scheme).

#### AREAS OF CONCERN:

The final site scheme has not been released (MRTC), this work remains on hold. The operational aspects of the station and the interface with the feeder bus service have not been finalized.

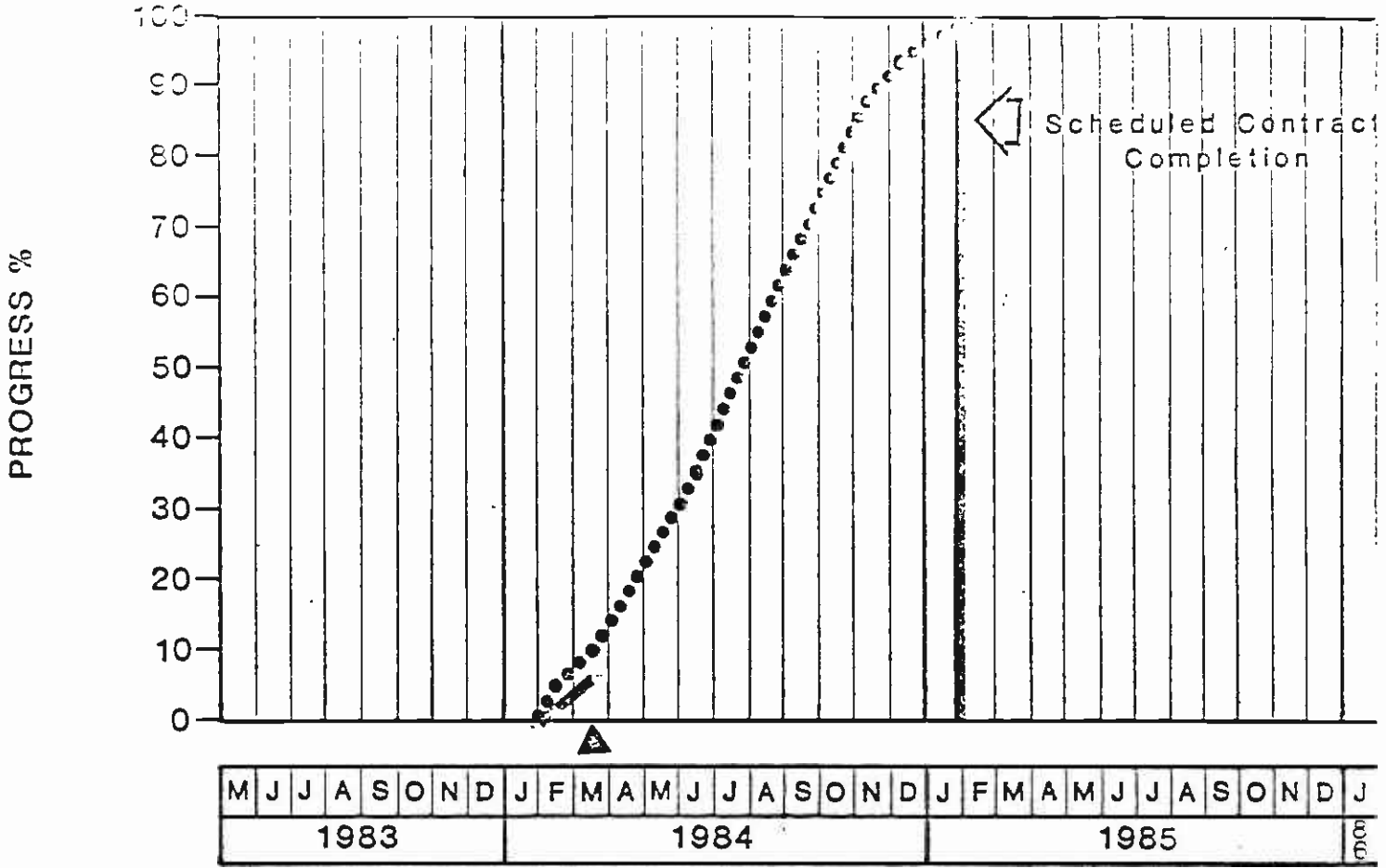
#### COMMENTS:

The initial submittal of the CPM Network, Staffing Plan, Activity Descriptions, and Drawing Control Register have been submitted by the Section Designer. (These documents have been received by TSD and comments forwarded to MRTC for incorporation into the schedule.) The conceptual station site plan has been approved by the Board.

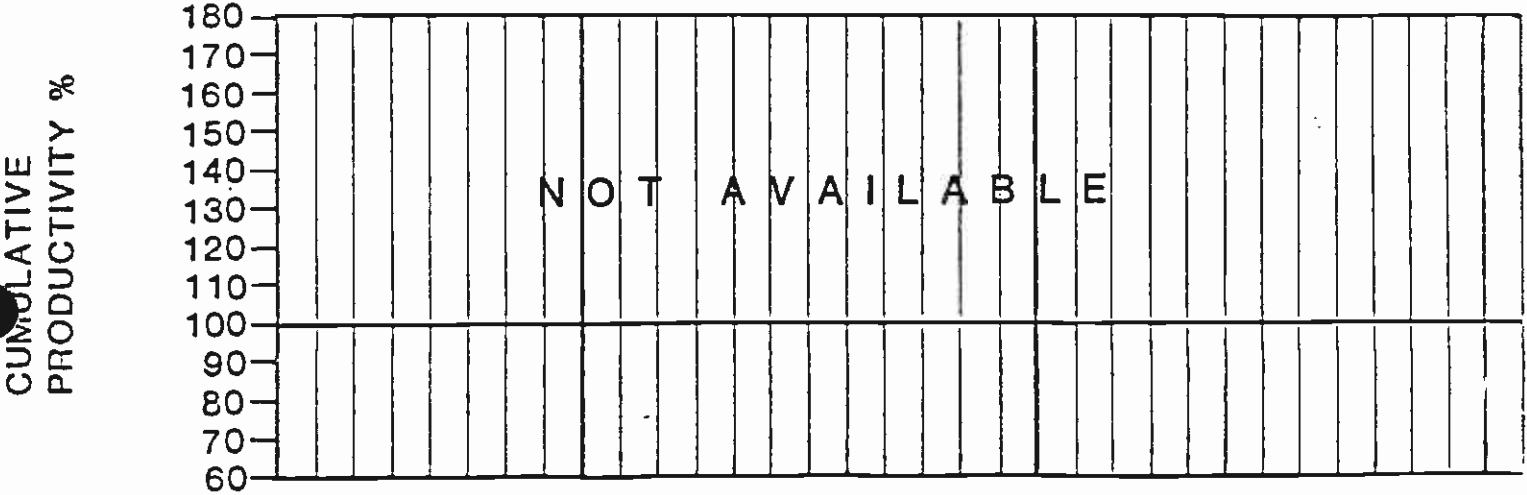
#### PERFORMANCE ASSESSMENT:

The subcontractor is proceeding on schedule.

*Handwritten note:* Line = forecast + MRTC  
6/07/84 JH



BI-WEEKLY REPORT	PLANNED					1																								
	ACTUAL					1																								
MRTC REPORT	PLANNED	NOT AVAILABLE																												
	ACTUAL					1	8																							
	FORECAST					5	10	15	25	35	45	57	68	80	90	95	98	100												

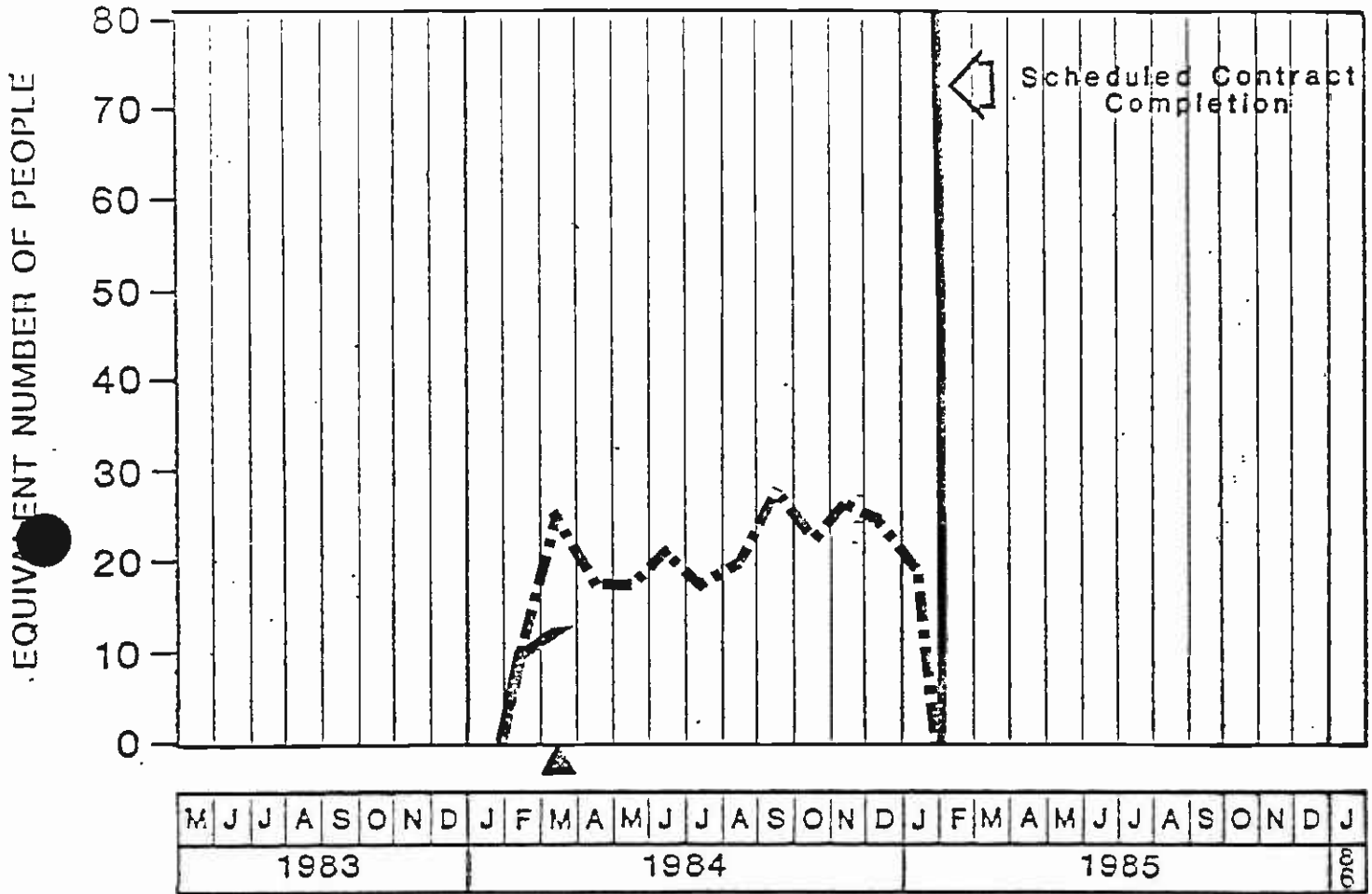


CONTRACT # A240

DESCRIPTION WILSHIRE/GRENSHAW STATION

SECTION DESIGNER TURNER/CHANG

### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

# MTA LIBRARY

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A245 WILSHIRE/LA BREA STATION  
 DESIGN CONTRACTOR - STV ENGINEERS/LYON ASSOCIATES

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	40	32.5
INCREMENTAL PROGRESS %	N/A	10	12.5
COST	1,609,000	1,628,000	426,000
MANHOURS	32,200	32,600	8,000
CONTRACT DURATION (MONTHS)	13	14	6

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MTRS. SPENT}} = \frac{.325 \times 32,600}{8,000} = 1.33$$

PRODUCTIVITY IS UP 8 POINTS FROM FEBRUARY (125% TO 133%).

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .325 \times 1,628,000 = \$ 529,100$$

THIS CONTRACTOR, BEING AT 32.5% COMPLETE, HAS THEORETICALLY EARNED \$529,100.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{529,100}{426,000} = 1.24$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.24 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. UP \$0.08 FROM FEBRUARY.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 426,000 - 529,100 = \$ (103,100)$$

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$103,100.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A245 WILSHIRE/LA BREA STATION  
DESIGN CONTRACTOR - STV ENGINEERS/LYON ASSOCIATES

---

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{426,000}{1,628,000} = 26\%$$

THE CONTRACTOR HAS SPENT 26% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 32.5%.

---

$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{1,628,000}{1.24} = \$ 1,312,903$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$1,312,903. THIS REPRESENTS A COST UNDERRUN OF \$296,097 OR AN 18% DECREASE.

---

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{1,628,000 - 529,100}{1,628,000 - 426,000} = 91\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 91% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

---

CONCLUSION

ONCE AGAIN PRODUCTIVITY IS WELL IN EXCESS OF 100% (133%), YET THE CONTRACTOR AS STATED IS BEING BEHIND IN PROGRESS.



05/15/84  
PC-14.20<14>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A245 Wilshire/La Brea Station	AWARD: 10/17/83
DESIGN SUBCONTRACTOR: STV/Lyon	NTP: 10/10/83
PROJECT MANAGER (TSD/MRTC): Streitman/Hodges	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	10/24/83	-	11/16/83	-
IN PROG. SUBMITTAL (60%)	04/16/84	05/07/84	-	-21
PRE FINAL SUBMITTAL (85%)	07/07/84	07/07/84	-	-
FINAL SUBMITTAL (100%)	10/16/84	10/16/84	-	-
BID DOCUMENTS	10/06/84	10/06/84	-	-
TIME OF PERFORMANCE	10/09/84	10/09/84	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Continuing to work overtime to regain schedule.

AREAS OF CONCERN:

Although overtime is being worked, it is uncertain whether the design can be completed as originally scheduled.

The relocation of a 42 inch storm drain is being investigated; various alternatives are being studied.

COMMENTS:

The delays to the contract are due to late mobilization of manpower at the onset of the contract and MRTC design changes which impede recovery to the schedule.

The In-Progress Submittal is forecast for May 7, 1984.

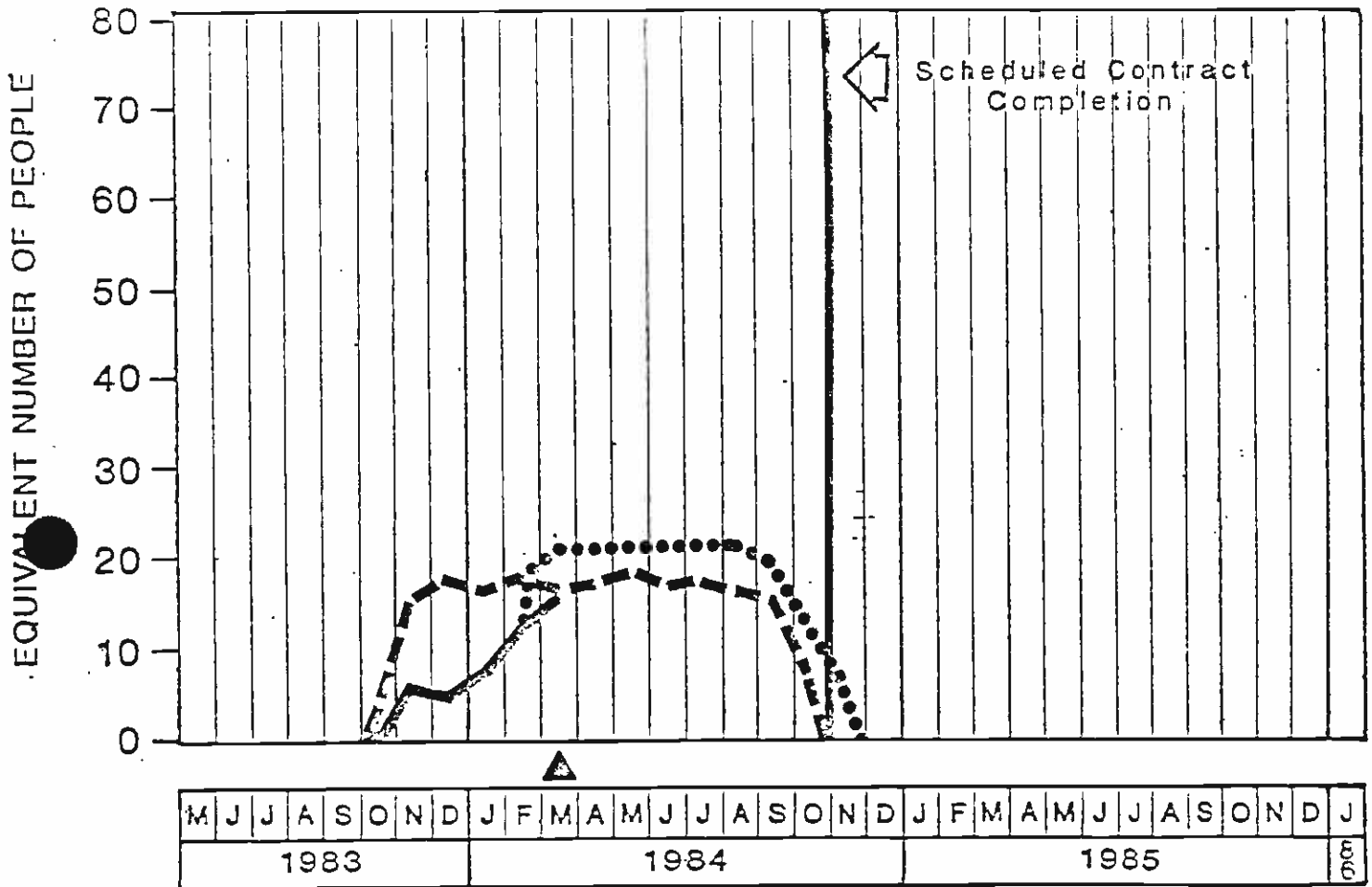
The Monthly Update from the subcontractor consisted only of the Design Control Register. The Critical Path Network and Monthly Progress Report were not submitted.

PERFORMANCE ASSESSMENT:

The subcontractor does not appear to be recovering from the slow start at the beginning of the contract. In addition, the design changes have compounded the problem. The subcontractor is now three weeks behind schedule.



### MANPOWER PLAN



PLANNED - - - - -  
FORECAST .....  
ACTUAL - - - - -

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A250 WILSHIRE/FAIRFAX STATION AND LINE  
DESIGN CONTRACTOR - BECHTEL

---

COMMENTS ON MRTIC PROGRESS REPORT

- o CONSULTANT IS FORECASTING A ONE MONTH SCHEDULE SLIP AND A COST INCREASE AT ONLY ONE MONTH INTO THE CONTRACT.

---

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	N/A	2
INCREMENTAL PROGRESS	N/A	N/A	2
COST	4,196,000	4,209,000	40,000
MANHOURS	78,600	78,800	500
CONTRACT DURATION (MONTHS)	16	17	1

---

CONCLUSION

NOTICE TO PROCEED WAS ISSUED ON 03/12/84

MAKING IT TOO EARLY TO EVALUATE PROGRESS.

05/15/84  
PC-14.20<15>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT:	A250 Line Section and Stage I Wilshire/Fairfax	AWARD:	12/28/83
DESIGN SUBCONTRACTOR:	Bechtel	NTP:	03/12/84
PROJECT MANAGER (TSD/MRTC):	Streitman/Cooper	DURATION:	462
		(CALENDAR DAYS)	

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	03/26/84	04/05/84	-	10
IN PROG. SUBMITTAL (60%)	10/25/84	10/25/84	-	-
PRE-FINAL SUBMITTAL (85%)	02/20/85	02/20/85	-	-
FINAL SUBMITTAL (100%)	06/12/85	06/12/85	-	-
BID DOCUMENTS	07/12/85	07/12/85	-	-
TIME OF PERFORMANCE	06/17/85	06/17/85	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The Notice to Proceed was issued on March 12, 1984.

#### AREAS OF CONCERN:

The Notice to Proceed was issued six (6) months late. This late start will impact construction NTP; the new schedule dates have not been established by MRTC.

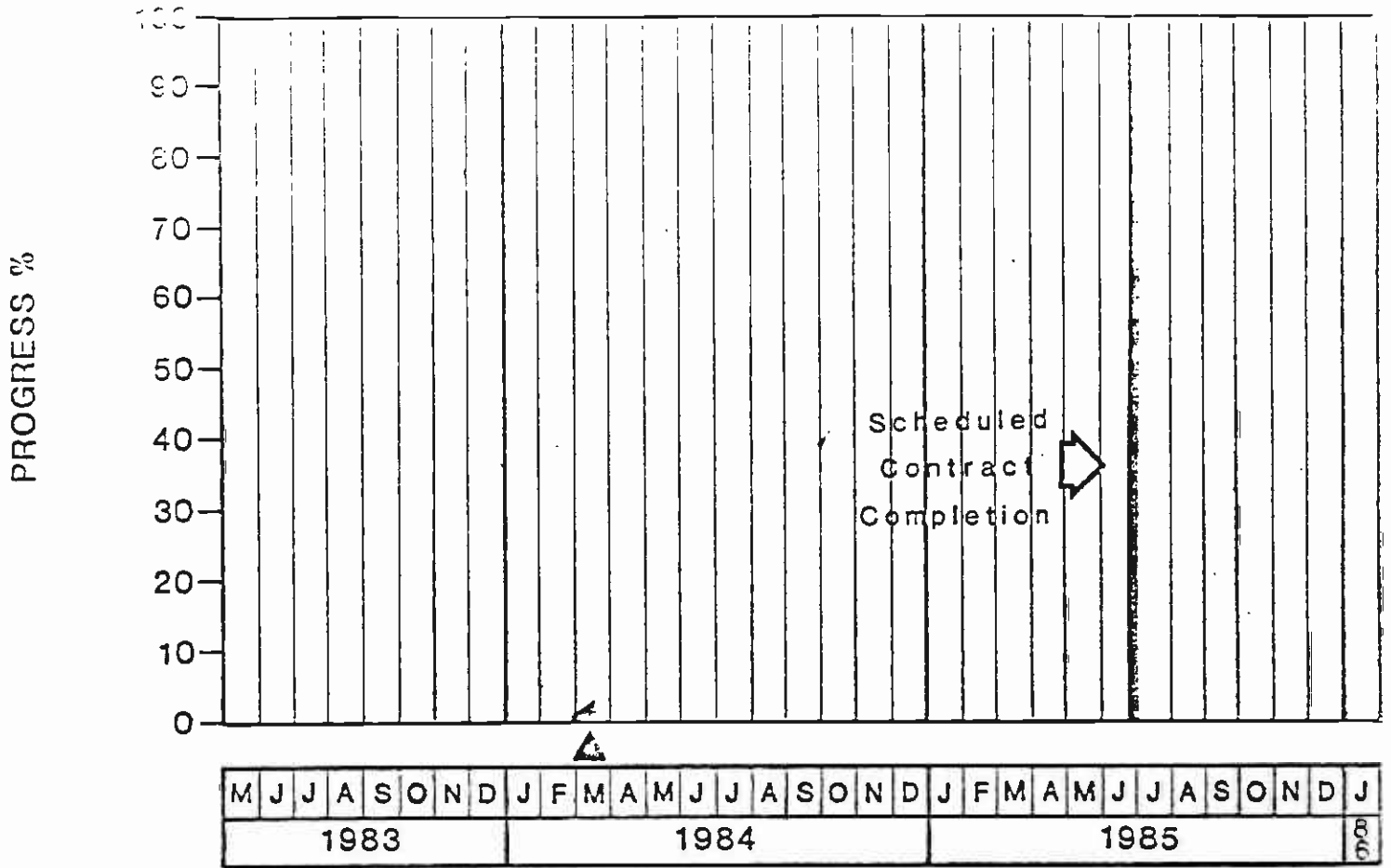
#### COMMENTS:

The need for a test pit for environmental and engineering data has been established. An estimate for design and construction has been prepared by the subcontractor. The test pit will be handled as a separate contract. The Design Status Report prepared by MRTC has the contract at 4 percent complete while the Project Progress Report shows 2 percent complete. This discrepancy must be corrected since the Project Progress Report is dated later.

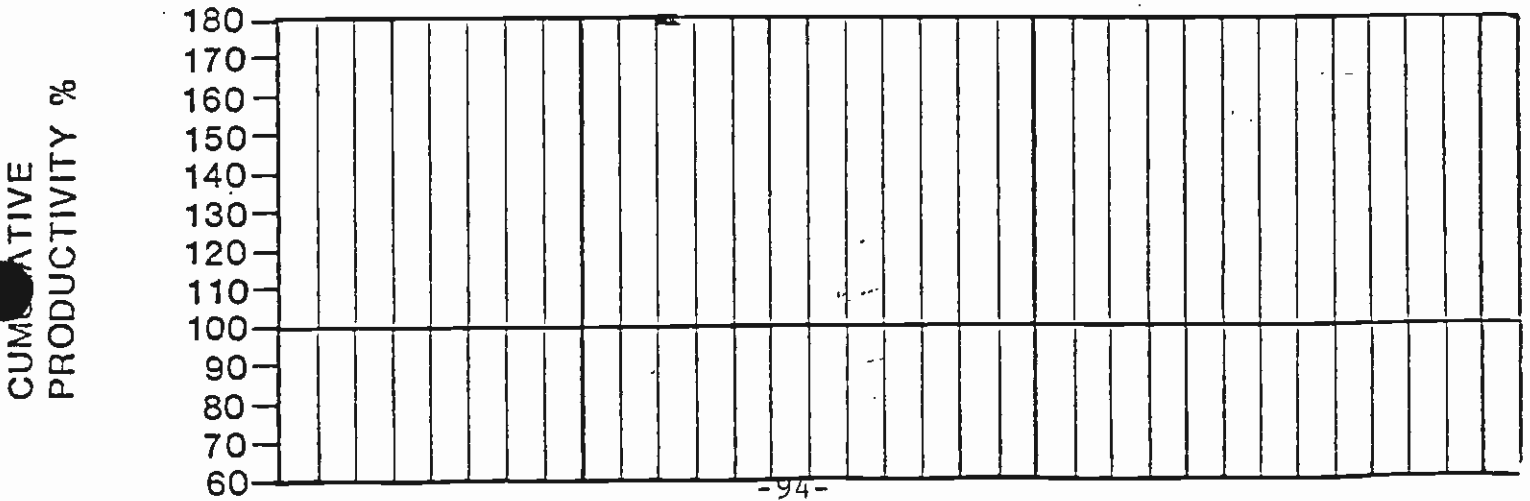
#### PERFORMANCE ASSESSMENT:

The subcontractor is proceeding on schedule. Currently working on architectural presentation to MRTC scheduled for May 15, 1984.

MRTC	PLAN	PLANNED
PROGRESS	ACTUAL	ACTUAL
REPORT	FORECAST	.....



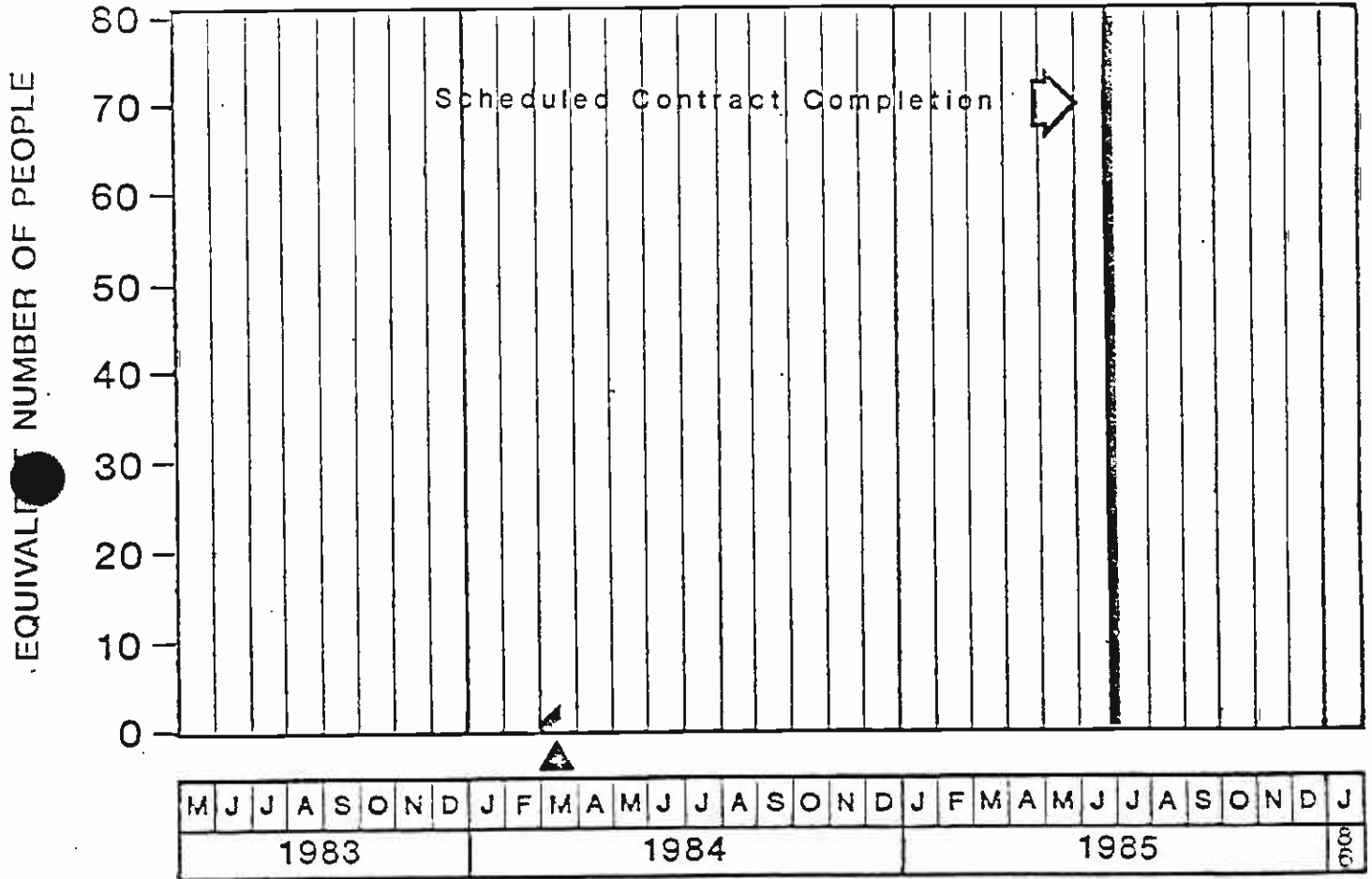
MRTC REPORT	PLANNED																										NOT AVAILABLE							
	ACTUAL																											2						
	FORECAST																											NOT AVAILABLE						



CONTRACT # A250

DESCRIPTION WILSHIRE/FAIRFAX STATION 2 LINE  
DESIGNER BECHTEL

### MANPOWER PLAN



PLANNED

NOT AVAILABLE

FORECAST

NOT AVAILABLE

ACTUAL

RFD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A275 FAIRFAX/BEVERLY STATION  
 DESIGN CONTRACTOR - WILSHIRE DESIGN ASSOCIATES

COMMENTS ON MRTC PROGRESS REPORT

- o AT 3 MONTHS INTO THE CONTRACT, THERE IS NO MONTHLY FORECAST SHOWN ON THE PROGRESS REPORT.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	15	12
INCREMENTAL PROGRESS %	N/A	7	4
COST	2,250,000	2,300,000	352,000
MANHOURS	41,300	42,300	5,800
CONTRACT DURATION (MONTHS)	12	13	3

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.12 \times 42,300}{5,800} = .88$$

THIS IS A SOMEWHAT UNFAVORABLE PRODUCTIVITY.

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .12 \times 2,300,000 = \$ 276,000$$

THIS CONTRACTOR, BEING AT 12% COMPLETE, HAS THEORETICALLY EARNED \$ 276,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{276,000}{352,000} = .78$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.78 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. A LOW CPI SUCH AS THIS WILL LEAD TO A COST OVERRUN IF NOT IMPROVED.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 352,000 - 276,000 = \$ 76,000$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 76,000.



COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A275 FAIRFAIX/BEVERLY STATION  
 DESIGN CONTRACTOR - WILSHIRE DESIGN ASSOCIATES

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{rcl} \% \text{ SPENT} = & \text{ACTUAL COSTS SPENT} & \\ \text{(CUMULATIVE)} & \frac{352,000}{2,300,000} & = 15\% \end{array}$$

THE CONTRACTOR HAS SPENT 15% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 12%.

$$\begin{array}{rcl} \text{EST. AT COMPLETION} = & \text{FORECAST AT COMPLETION} & \\ \text{(CALCULATED - EAC)} & \frac{2,300,000}{2,948,718} & = \$2,948,718 \\ & \text{COST PERFORMANCE INDEX} & .78 \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,948,718. THIS REPRESENTS A COST OVERRUN OF \$698,718 OR A 31% INCREASE. THE CONSULTANT MUST TAKE ACTION TO IMPROVE HIS COST PERFORMANCE IF THIS CONTRACT IS TO BE COMPLETED WITHIN BUDGET.

$$\begin{array}{rcl} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION - EARNED COSTS} & \frac{2,300,000 - 276,000}{2,300,000 - 352,000} \\ \text{PERFORMANCE INDEX} & & \text{FORECAST AT COMPLETION - ACTUAL \$ SPENT} & \\ & & & = 104\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 104% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE CONSULTANT IS FALLING BEHIND IN BOTH PRODUCTIVITY AND COST PERFORMANCE. IT IS RECOMMENDED THAT A "GET WELL" PLAN BE DEVELOPED TO GET THE CONTRACT BACK ON TRACK.

05/15/84  
PC-14.20<16>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A275 Fairfax/Beverly Station	AWARD:	12/30/83
DESIGN SUBCONTRACTOR: Wilshire Design Associates	NTP:	12/30/83
PROJECT MANAGER (TSD/MRTC): Streitman/Tallet	DURATION:	365
	(CALENDAR DAYS)	

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	01/13/84	-	02/09/84	
IN PROG. SUBMITTAL (60%)	06/28/84	06/28/84	-	-
PRE FINAL SUBMITTAL (85%)	09/29/84	09/29/84	-	-
FINAL SUBMITTAL (100%)	12/27/84	12/27/84	-	-
BID DOCUMENTS	01/25/85	01/26/85	-	-
TIME OF PERFORMANCE	12/28/84	12/28/84	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems the previous period.

AREAS OF CONCERN:

At this time there are no problems areas.

COMMENTS:

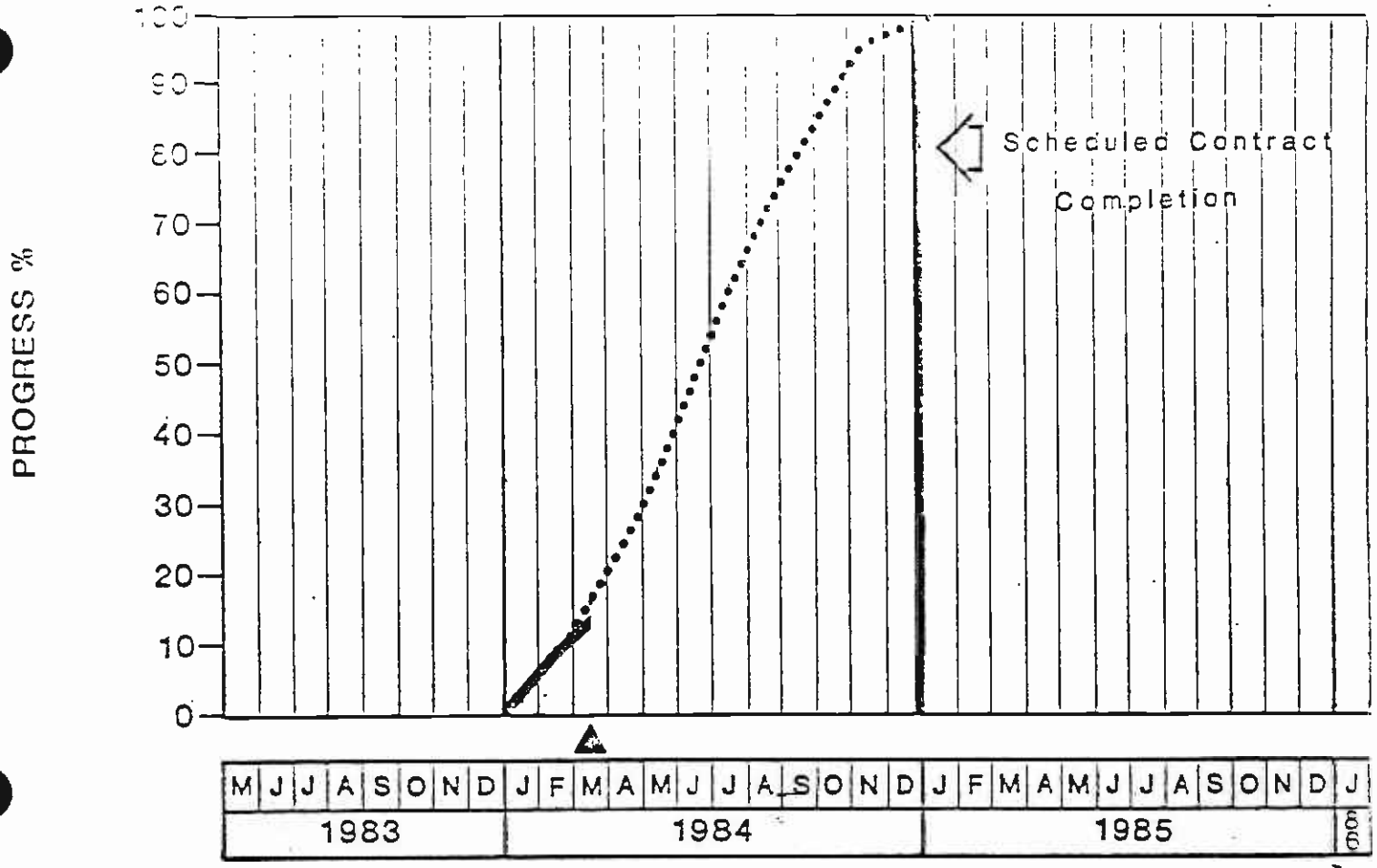
The City of Los Angeles street right-of-way requirements for Beverly Boulevard and Fairfax Avenue may impact station design.

RTD is working with CBS and Farmers Market for future site development.

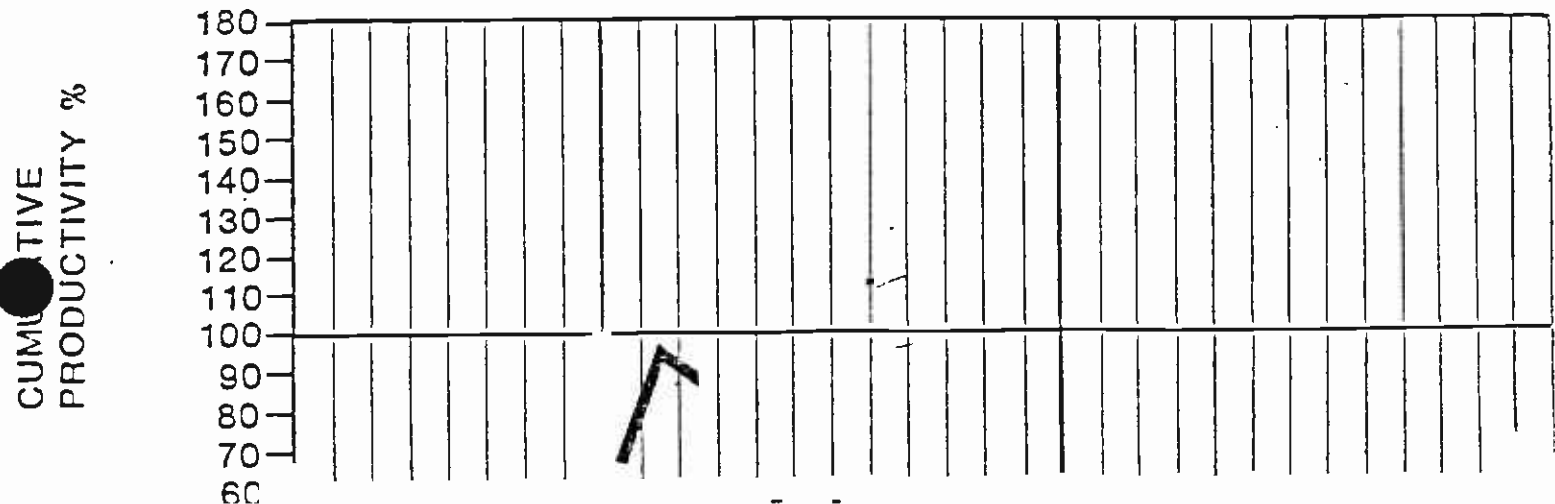
The monthly update from the subcontractor was incomplete; the Monthly Progress Report was not received.

PERFORMANCE ASSESSMENT:

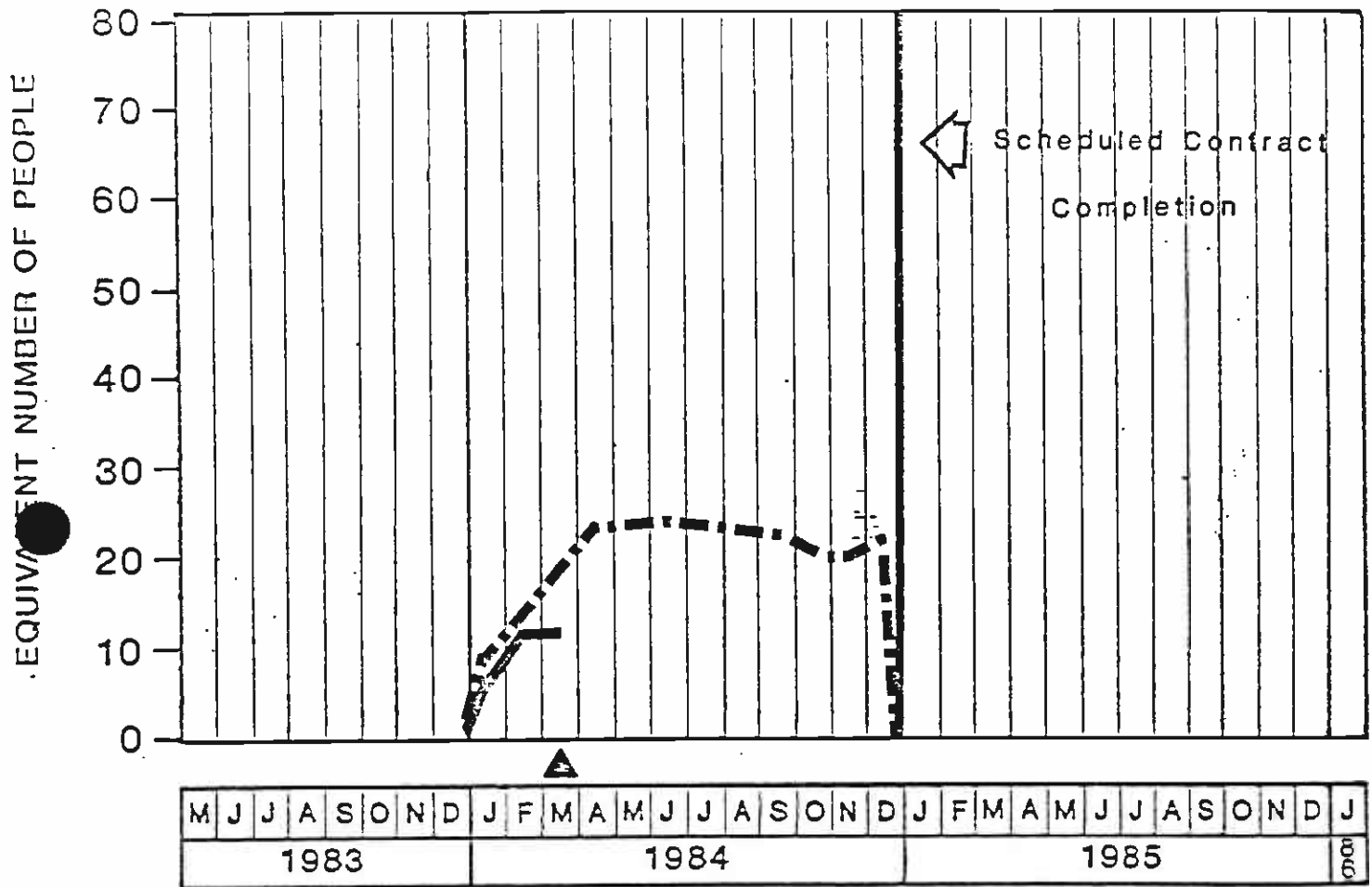
The Subcontractor is progressing well and on schedule.



MRTC REPORT	PLANNED	NOT AVAILABLE																	
	ACTUAL	2.5	8	12															
	FORECAST	2	8	15	25	35	45	60	69	80	87	95	98	100					



### MANPOWER PLAN



PLANNED 

FORECAST 

ACTUAL 

NOT  
AVAILABLE

COST ANALYSIS

CONTRACT # - A310 FARFAX/SANTA MONICA & LA BREA/SUNSET STATIONS  
 DESIGN CONTRACTOR - CARTER ENGINEERS/AMMANN & WHITNEY

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	9	7.5
INCREMENTAL PROGRESS %	N/A	3	2
COST	4,410,000	4,409,000	349,000
MANHOURS	84,200	84,200	5,400
CONTRACT DURATION (MONTHS)	25	24	4

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MHRS. SPENT}} = \frac{.075 \times 84,200}{5,400} = 1.17$$

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .075 \times 4,409,000 = \$ 330,675$$

THIS CONTRACTOR, BEING AT 7.5% COMPLETE, HAS THEORETICALLY EARNED \$ 330,675.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{330,675}{349,000} = .95$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.95 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS CPI IS WITHIN AN ACCEPTABLE RANGE.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 349,000 - 330,675 = \$ 18,325$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$18,325.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A310 FAIRFAX/SANTA MONICA & LA BREA/SUNSET STATIONS  
DESIGN CONTRACTOR - CARTER ENGINEERS/AMMANN & WHITNEY

---

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{349,000}{4,409,000} = 7.9\%$$

THE CONTRACTOR HAS SPENT 7.9% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 7.5%.

---

$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} \quad \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{4,409,000}{.95} = \$ 4,641,053$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$4,641,053. THIS REPRESENTS A COST OVERRUN OF \$232,053 OR A 5% INCREASE.

---

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{4,409,000 - 330,675}{4,409,000 - 349,000} = 101\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 101% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

---

CONCLUSION

THE CONSULTANT HOURLY RATE IS CURRENTLY AT \$65 PER HOUR AS OPPOSED TO A PLANNED HOURLY RATE OF \$52. THIS HAS LED TO A LOW COST PERFORMANCE INDEX (.95) AS COMPARED TO THE PRODUCTIVITY RATE (117%). IF THIS TREND CONTINUES, A POTENTIAL FOR BUDGET OVERRUN EXISTS, AS EVIDENCED BY THE ESTIMATE AT COMPLETION OF \$4,641,053 (5% OVERRUN).

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A310 Fairfax/Sta. Monica, AWARD: 06/16/83  
La Brea/Sunset & Line  
DESIGN SUBCONTRACTOR: Carter Engrs./Ammann & Whitney NTP: 12/05/83  
PROJECT MANAGER (TSD/MRTC): Shah/Yacoub DURATION: 730  
(CALENDAR DAYS)

LA BREA/SUNSET

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	12/19/83	-	01/17/84*	-
IN PROG. SUBMITTAL (60%)	02/10/85	02/10/85 ✓	-	-
PRE FINAL SUBMITTAL (85%)	06/25/85	06/25/85 ✓	-	-
FINAL SUBMITTAL (100%)	10/10/85	10/10/85 ✓	-	-
BID DOCUMENTS	11/10/85	11/10/85 ✓	-	-
TIME OF PERFORMANCE	12/05/85	12/05/85 ✓	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Prints showing a new station entry configuration and a shift in the alignment in the vicinity of the Hollywood/Cahuenga Station were issued to the subcontractor.

*This belongs to A-350 contract and not A-310!!*

AREAS OF CONCERN:

\* To date, TSD Program Control has not received a complete Control System submittal; hence, no comprehensive review has been done. However, the MRTC Project Manager has already approved the subcontractor's Control Schedule, Staffing Plan and Design Control Register.

COMMENTS:

The subcontractor continues to provide preliminary alignment and profile design and preliminary station structural design. The subcontractor made a final architectural conceptual design presentation to MRTC and SCRTD staff on March 23, 1984. ✓

PERFORMANCE ASSESSMENT:

The contract is on schedule.

05/15/84  
PC-14.20<17>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

Page 2 of 2

DESIGN CONTRACT: A310

AWARD: 06/16/83

DESIGN SUBCONTRACTOR: Carter Engrs./Ammann & Whitney NTP: 12/05/83  
PROJECT MANAGER (TSD/MRTC): Shah/Yacoub DURATION: 730  
(CALENDAR DAYS)

FAIRFAX/SANTA MONICA

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	12/19/83		01/17/84*	
IN PROG. SUBMITTAL (60%)	11/10/84	11/10/84	-	-
PRE FINAL SUBMITTAL (85%)	03/10/85	03/10/85	-	-
FINAL SUBMITTAL (100%)	06/10/85	06/10/85	-	-
BID DOCUMENTS	11/10/85	11/10/85	-	-
TIME OF PERFORMANCE	12/05/85	12/05/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

AREAS OF CONCERN:

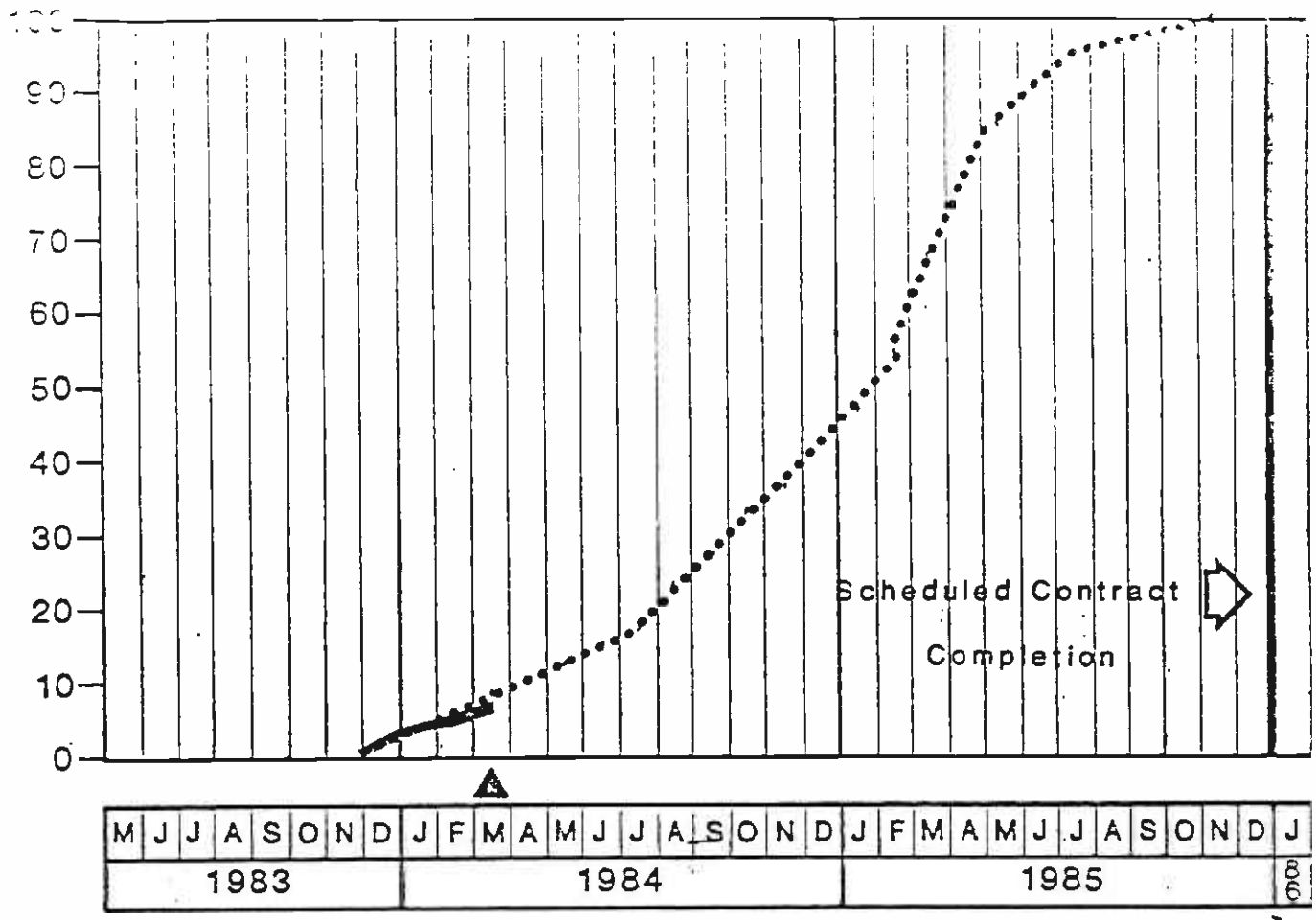
See Comments on Page One of Contract A310

COMMENTS:

PERFORMANCE ASSESSMENT:



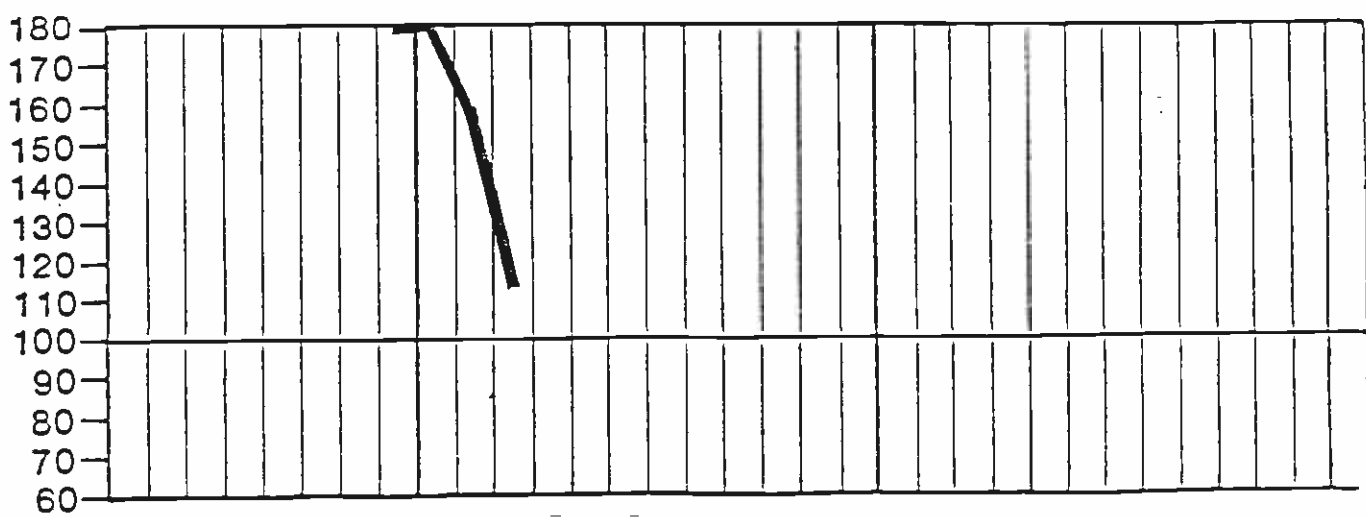
PROGRESS %



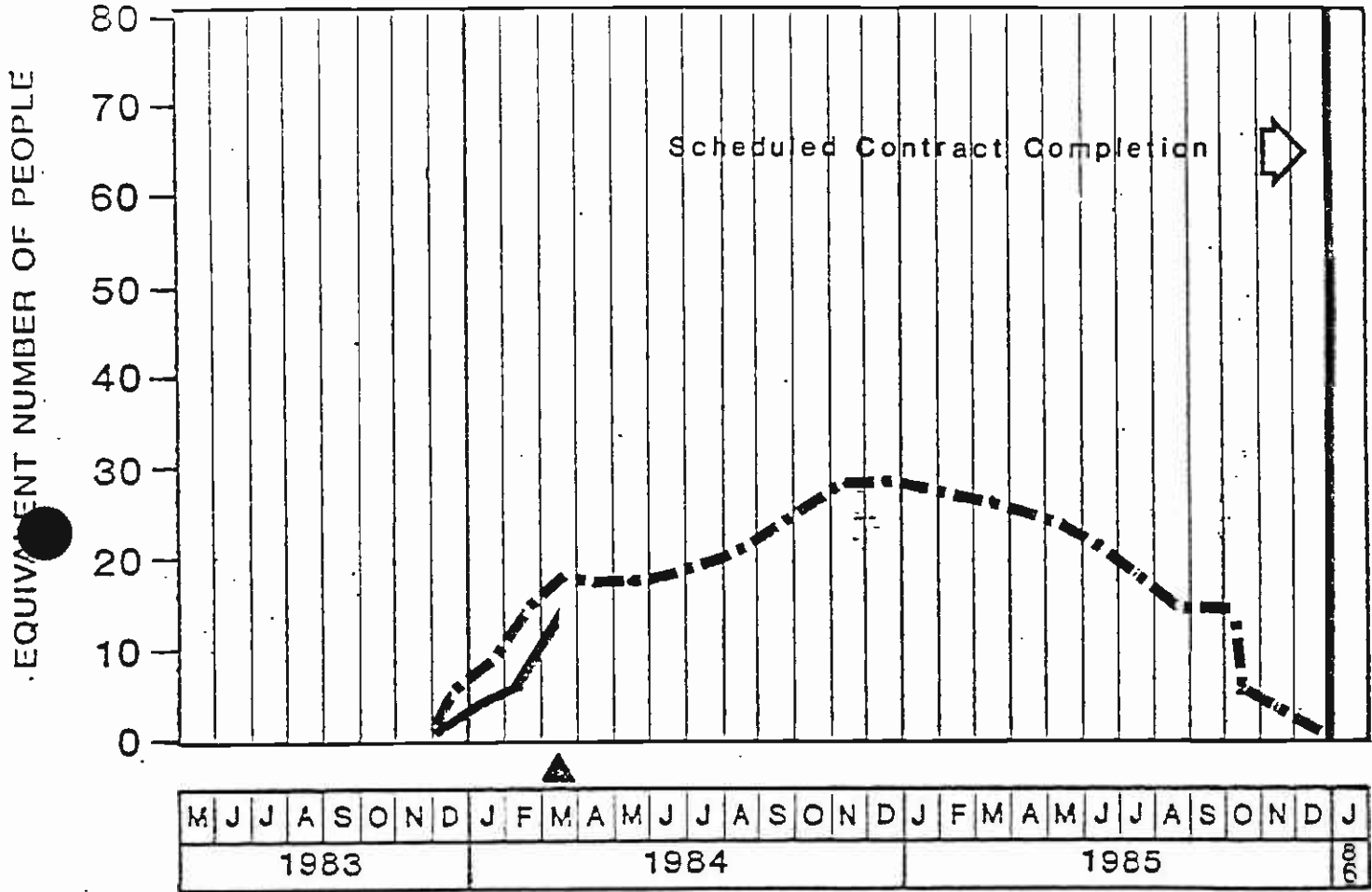
MRTC REPORT

	PLANNED	OT AVAILABLE
ACTUAL	1.5, 4, 5.5, 7.5	
FORECAST	2, 4, 6, 9, 12, 15, 17, 20, 25, 30, 35, 40, 5, 52, 61, 71, 80, 85, 90, 95, 97, 98, 99, 0	

CUMULATIVE PRODUCTIVITY %



MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

NOT AVAILABLE

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A350 HOLLYWOOD/CAHUENGA STATION  
 DESIGN CONTRACTOR - STULL ASSOCIATES

COMMENTS ON MRTIC PROGRESS REPORT

- o NO DISCUSSION ON THE FOLLOWING ITEMS:
  - oo REASON FOR DECLINE IN PROGRESS (15% - 8%)
  - oo PROBLEM AREAS
  - oo REASONS FOR INCREASE IN FORECAST-TO-COMPLETION (VARIES FROM LAST MONTH).

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	PLAN	FORECAST	ACTUAL TO DATE
% COMPLETE	12	12	8
INCREMENTAL PROGRESS %	5	5	-7 *
COST	2,071,000	2,265,000	230,000
MANHOURS	431,000	47,200	3,500
CONTRACT DURATION (MONTHS)	16	18	3

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST  
 (CUMULATIVE)  $\frac{\quad}{\text{MRS. SPENT}} = \frac{8 \quad \times \quad 47,200}{3,500} = 107\%$

EARNED COSTS = % COMPLETE X TOTAL COST FORECAST  
 (CUMULATIVE)  $= .08 \times 2,265,000 = \$181,200$

THIS CONTRACTOR, BEING AT 8% COMPLETE, HAS THEORETICALLY EARNED \$181,200 BUT HAS BEEN PAID \$230,000 TO DATE.

*Please calculate in light of the change in alignment. These numbers will change considerably.*

COST PERFORMANCE INDEX = EARNED COSTS  
 (CUMULATIVE) - CPI  $\frac{181,200}{\text{ACTUAL COSTS SPENT } 230,000} = .79$  *lets add the c.o. cost. 925 m.h. + 110 m.h. + 2020 m.h. = 255 m.h. X \$54/hr. ave*

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .79 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS IS AN UNSATISFACTORY CPI AND NEEDS TO BE IMPROVED.

COST VARIANCE = ACTUAL \$ SPENT - EARNED \$ = 230,000 - 181,200 = \$ 48,800  
 (CUMULATIVE)  $\frac{230,000 - 181,200}{181,200} = 1.06$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$48,800.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A350 HOLLYWOOD/CAHUENGA STATION  
DESIGN CONTRACTOR - STULL ASSOCIATES

PERFORMANCE ASSESSMENT (CONTINUED)

$$\% \text{ SPENT (CUMULATIVE)} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{230,000}{2,265,000} = 10.2\%$$

*Blomens: effort lost  
consider alignment  
shift.*

THE CONTRACTOR HAS SPENT 10.2% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 8%.

$$\text{EST. AT COMPLETION (CALCULATED - EAC)} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,265,000}{.79} = \$ 2,867,089$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,867,089. THIS REPRESENTS A COST OVERRUN OF \$602,089 OR A 27% INCREASE FROM PRESENT FORECAST TO COMPLETION BUT A \$796,089 INCREASE FROM THE PLANNED BUDGET.

$$\text{TO COMPLETE PERFORMANCE INDEX} = \frac{\text{FORECAST AT COMPLETION - EARNED COSTS}}{\text{FORECAST AT COMPLETION - ACTUAL \$ SPENT}} = \frac{2,265,000 - 181,200}{2,265,000 - 230,000} = 102\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 102% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

\*THE MARCH 1984 MRTC REPORT DOES NOT INDICATE THE STATED FEBRUARY PROGRESS OF 15%. THEREFORE IT IS IMPOSSIBLE TO SEE THE DECLINE OF 7% IN PROGRESS FOR THE MONTH OF MARCH WITHOUT REFERRING TO THE FEBRUARY PROGRESS REPORT. ADDITIONALLY, THIS CONTRACT BEING ONLY 3 MONTHS OLD, HAS SLIPPED IN SCHEDULE BY 2 MONTHS AND HAS BEEN REFORECASTED TWICE (FEBRUARY AND MARCH).

THIS CONTRACTOR IS INDICATING PRODUCTIVITY IN EXCESS OF 100% BUT IS BEHIND IN PROGRESS. FURTHER, THE ACTUAL COST PER MANHOUR HAS INCREASED 36.8% OVER THE PLANNED COSTS PER MANHOUR. NONE OF THE ABOVE PROBLEM AREAS HAVE BEEN DISCUSSED IN THE NARRATIVE.

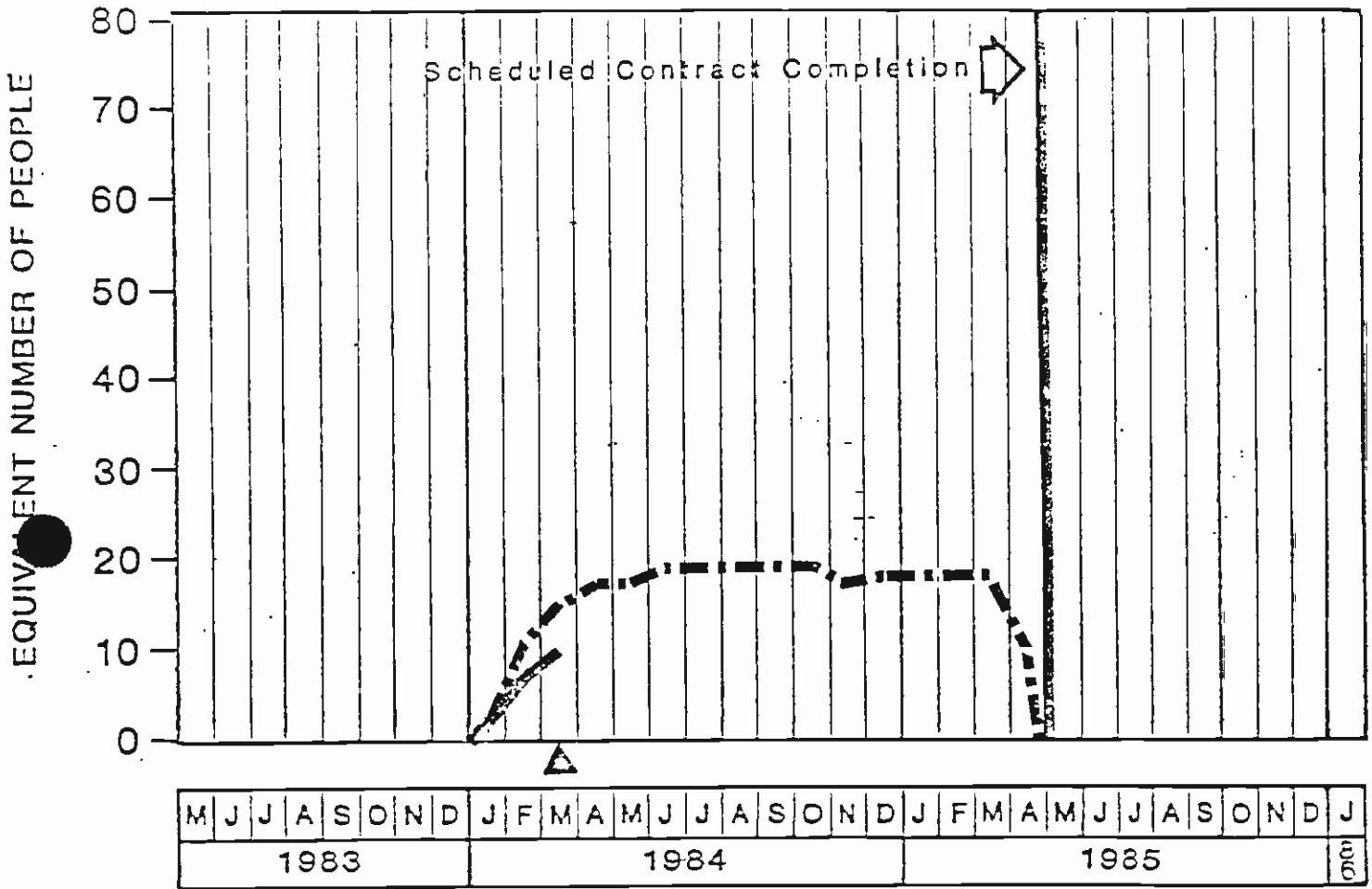
*Program Control is aware  
of this and has been  
repeatedly informed of  
7% progress drop due to  
the alignment shift.*

*No fault of S.D.*





### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A410 LINE BETWEEN HOLLYWOOD/CAHUENGA AND UNIVERSAL CITY  
 DESIGN CONTRACTOR - TRANSIT & TUNNEL CONSULTANTS

COMMENTS ON MRIC PROGRESS REPORT

o NONE

*Please read/study the contract. This one specifically have been allowed lot of study/research time due to special design/const. Requirements and hence it's cost will be higher.*

DATA REPORTED BY MRIC/DESIGN CONSULTANT

	PLAN	FORECAST	ACTUAL TO DATE
% COMPLETE	N/A	15	12.5
INCREMENTAL PROGRESS %	N/A	5	7.5
COST	2,627,000	2,627,000	385,000
MANHOURS	460,000	460,000	43,000
CONTRACT DURATION (MONTHS)	12	14	3

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \text{TOTAL MH FORECAST} = \frac{.125 \times 460,000}{\text{MHS. SPENT}} = \frac{57,500}{43,000} = 134\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .125 \times 2,627,000 = \$328,375$$

THIS CONTRACTOR, BEING AT 12.5% COMPLETE, HAS THEORETICALLY EARNED \$328,375.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{328,375}{385,000} = .85$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .85 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 385,000 - 328,375 = \$ 56,625$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 56,625.



COST ANALYSIS  
(CONTINUED)

CONTRACT # - A410 LINE BETWEEN HOLLYWOOD/CAHUENGA AND UNIVERSAL CITY  
DESIGN CONTRACTOR - TRANSIT & TUNNEL CONSULTANTS

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{385,000}{2,627,000} = 14.7\%$$

*See my previous page comments -*

THE CONTRACTOR HAS SPENT 14.7% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 12.5%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,627,000}{.85} = \$ 3,090,588$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,090,588. THIS REPRESENTS A COST OVERRUN OF \$463,588 OR AN 18% INCREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,627,000 - 328,375}{2,627,000 - 385,000} = 103\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 103% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

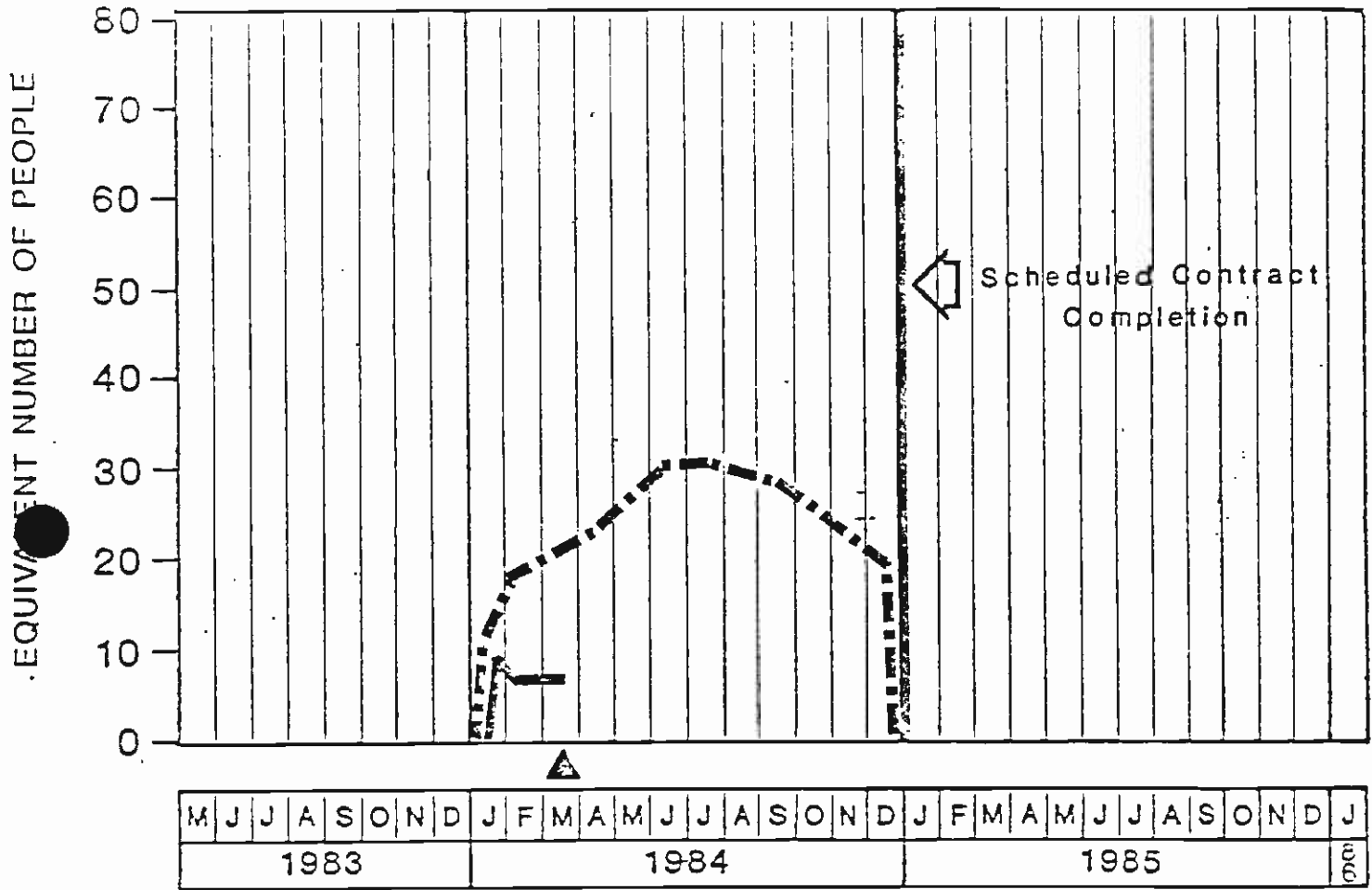
CONCLUSION

PRODUCTIVITY IS IN EXCESS OF 100% (134%), YET THE CONTRACTOR IS BEHIND IN PROGRESS. ALSO, THE COST PER MANHOUR RATES HAVE INCREASED SIGNIFICANTLY OVER THE PLAN (56.6%).





### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

RID METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A415 HOLLYWOOD BOWL  
 DESIGN CONTRACTOR - WARNECKE/GEHRY/EDWARDS & KELCEY

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	10	10	7
INCREMENTAL PROGRESS %	5	5	7
COST	2,014,000	2,014,000	158,000
MANHOURS	402,000	402,000	25,000
CONTRACT DURATION (MONTHS)	12	12	2

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MRS. SPENT}} = \frac{.07 \times 402,000}{25,000} = 113\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .07 \times 2,014,000 = \$140,980$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 7% COMPLETE, HAS THEORETICALLY EARNED \$140,980.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{140,980}{158,000} = .89$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .89 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 158,000 - 140,980 = \$ 17,020$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 17,020.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A415 HOLLYWOOD BOWL  
DESIGN CONTRACTOR - WARNECKE/GEHRY/EDWARDS & KELCEY

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{158,000}{2,014,000} = 7.8\%$$

THE CONTRACTOR HAS SPENT 7.8% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 7%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,014,000}{.89} = \$ 2,262,921$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,262,921. THIS REPRESENTS A COST OVERRUN OF \$248,921 OR A 12% INCREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,014,000 - 140,980}{2,014,000 - 158,000} = 101\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 101% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

RTD PROJECT MANAGER WAS REQUESTED TO WRITE A LETTER TO MRTIC TELLING THEM TO STOP WORK ON THIS CONTRACT. A CHANGE ORDER WILL THEN BE WRITTEN TO THE CONSULTANT REQUESTING A "HOLD" ON ALL DESIGN WORK AT 50% COMPLETE.

05/15/84  
PC-14.20<21>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A415 Hollywood Bowl Station  
DESIGN SUBCONTRACTOR: Edwards & Kelcey  
PROJECT MANAGER (TSD/MRTC): Shah/Cofer

AWARD: 09/16/83  
NTP: 02/13/84  
DURATION: 365  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	02/27/84	-	03/08/84	-
IN PROG. SUBMITTAL (60%)	08/13/84	08/1384 -	-	-
PRE FINAL SUBMITTAL (85%)	11/19/84	11/19/84	-	-
FINAL SUBMITTAL (100%)	02/11/85	02/11/85	-	-
BID DOCUMENTS	02/11/85	02/11/85	-	-
TIME OF PERFORMANCE	02/11/85	02/11/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The initial submittal of control system documents has been received.

AREAS OF CONCERN:

There are no areas of concern for this period.

COMMENTS:

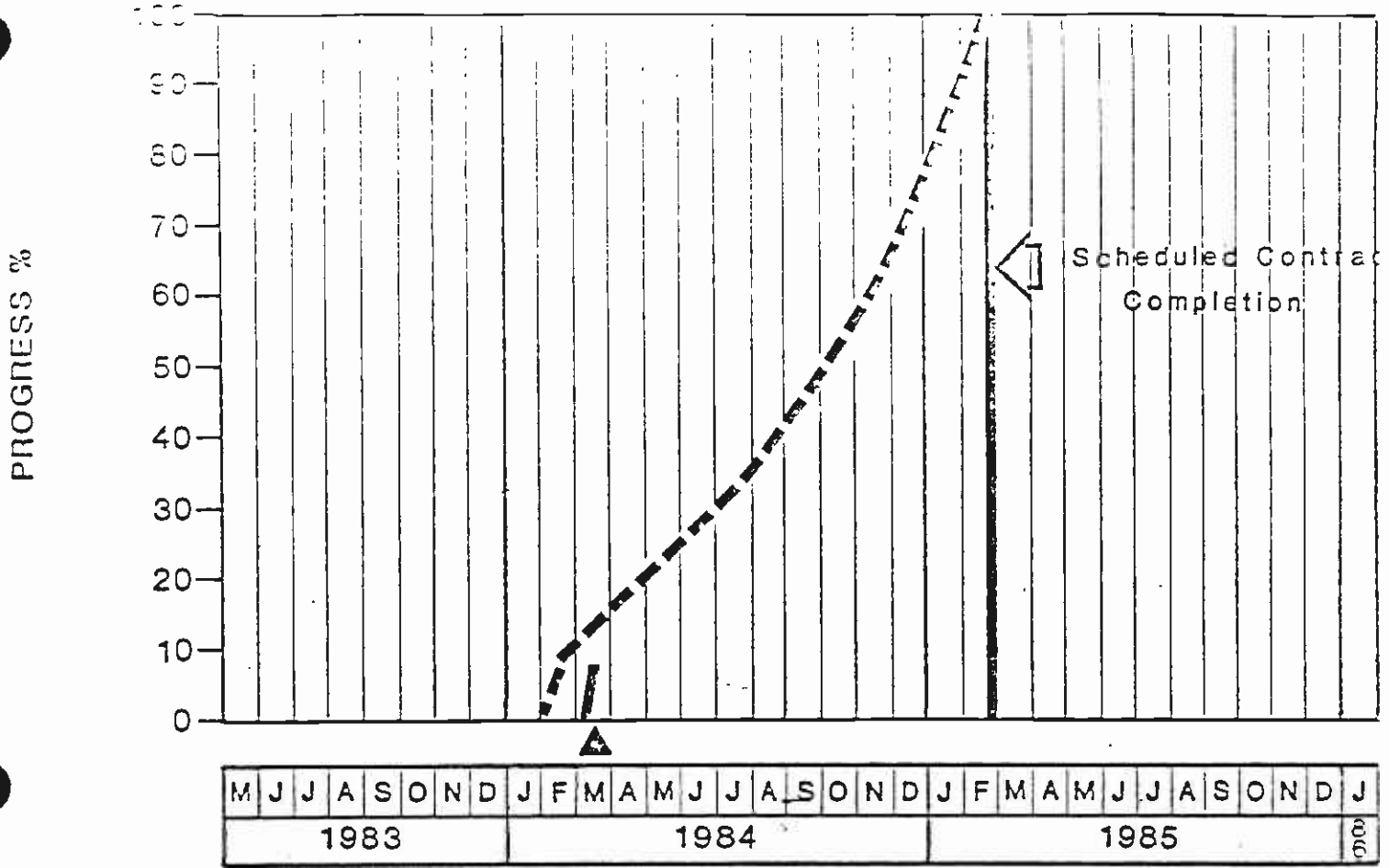
A comprehensive design schedule review for the subject contract has been performed.

The initial in-house review of architectural conceptual design was held March 21, 1984.

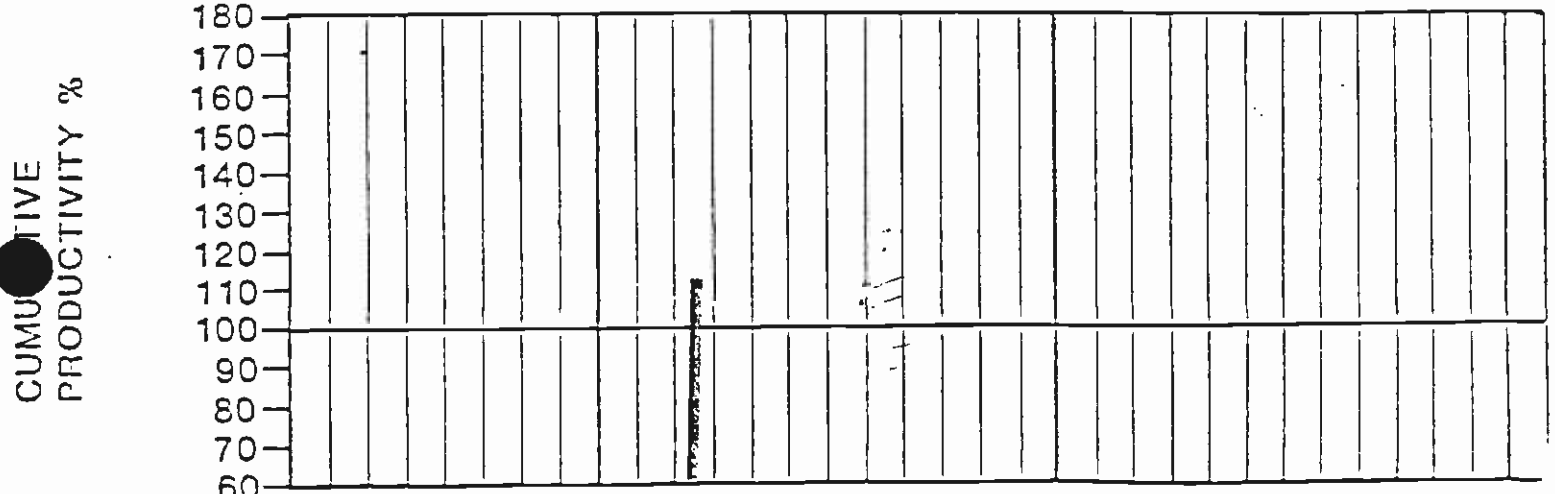
PERFORMANCE ASSESSMENT:

The subcontractor is on schedule.

MITC	PLAN	██████████
PROGRESS	ACTUAL	██████████
REPORT	FORECAST	.....



MITC REPORT	PLANNED								5	10	15	21	30	40	50	62	72	82	92	97	100										
	ACTUAL								0	7																					
	FORECAST	NOT AVAILABLE																													



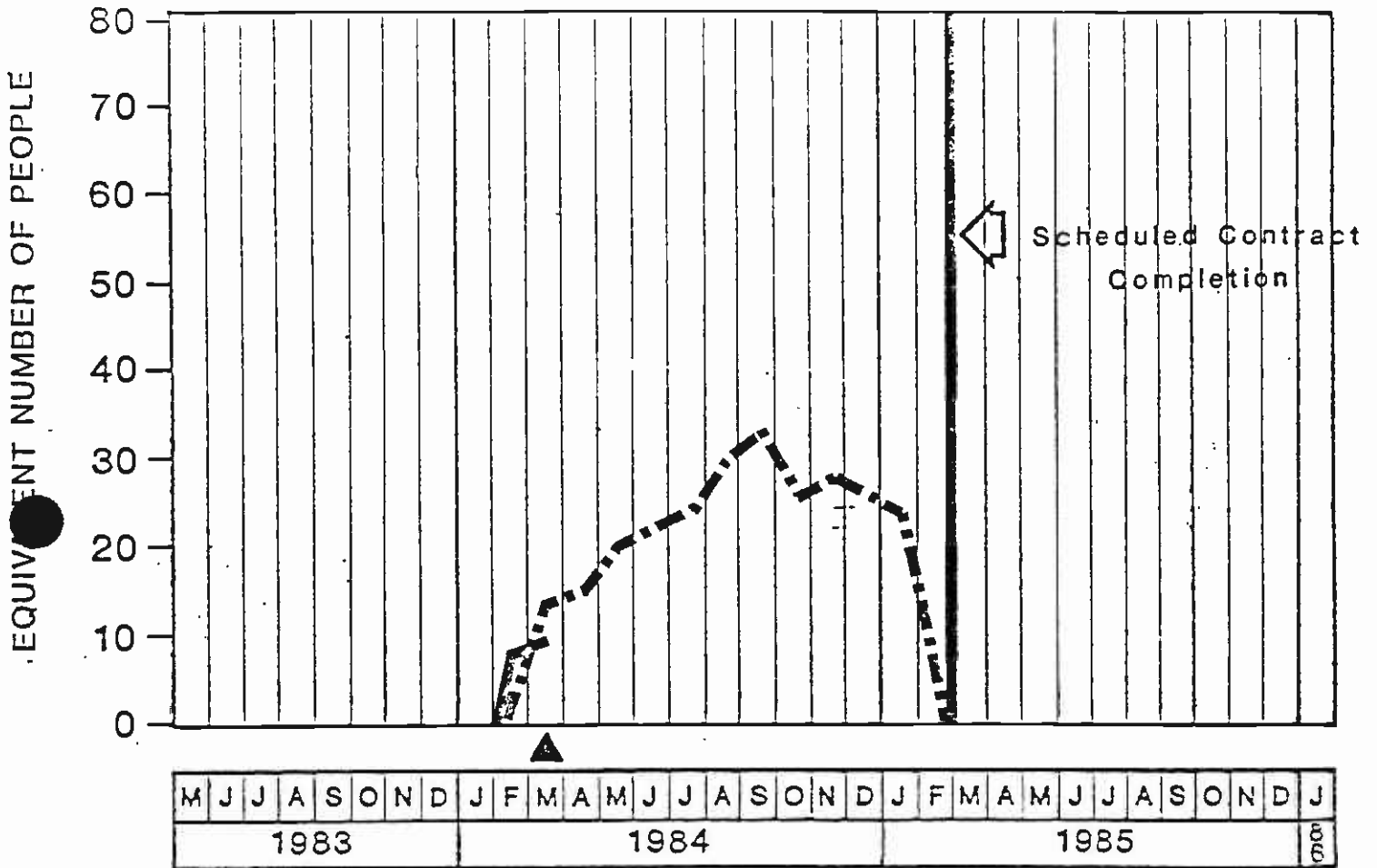


CONTRACT # A415

DESCRIPTION Hollywood Bowl

SECTION DESIGNER Warnecke/Gehry/Edwards & Kelcey

### MANPOWER PLAN



PLANNED 

FORECAST 

ACTUAL 

RTD METRO RAIL PROJECT  
C.P.E. PHASE  
SUBCONTRACTOR EVALUATION  
MARCH 1984

COST ANALYSIS

CONTRACT # - A425 UNIVERSAL CITY STATION  
DESIGN CONTRACTOR - THE LUCKMAN PARTNERSHIP

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COMMENTS ON MRTIC PROGRESS REPORT

o NONE

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DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	10	10	8.5
INCREMENTAL PROGRESS	5	5	4.5
COST	2,403,000	2,403,000	200,000
MANHOURS	535,000	535,000	4,400
CONTRACT DURATION	13	13	2

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CONCLUSION

NOTICE TO PROCEED WAS ISSUED ON 02/13/84

MAKING IT TOO EARLY TO EVALUATE PROGRESS.

05/15/84  
PC-14.20<22>

### SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A425 Universal City	AWARD: 02/06/84
DESIGN SUBCONTRACTOR: Luckman Partnership	NTP: 02/13/84
PROJECT MANAGER(TSD/MRTC): Quesada/McCauley	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	02/27/84	-	03/27/84	-
IN PROG. SUBMITTAL (60%)	08/13/84	08/13/84	-	-
PRE FINAL SUBMITTAL (85%)	11/19/84	11/19/84	-	-
FINAL SUBMITTAL (100%)	02/11/85	02/11/85	-	-
BID DOCUMENTS	02/15/85	02/15/85	-	-
TIME OF PERFORMANCE	02/11/85	02/11/85	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The Control System submittal has been received.

#### AREAS OF CONCERN:

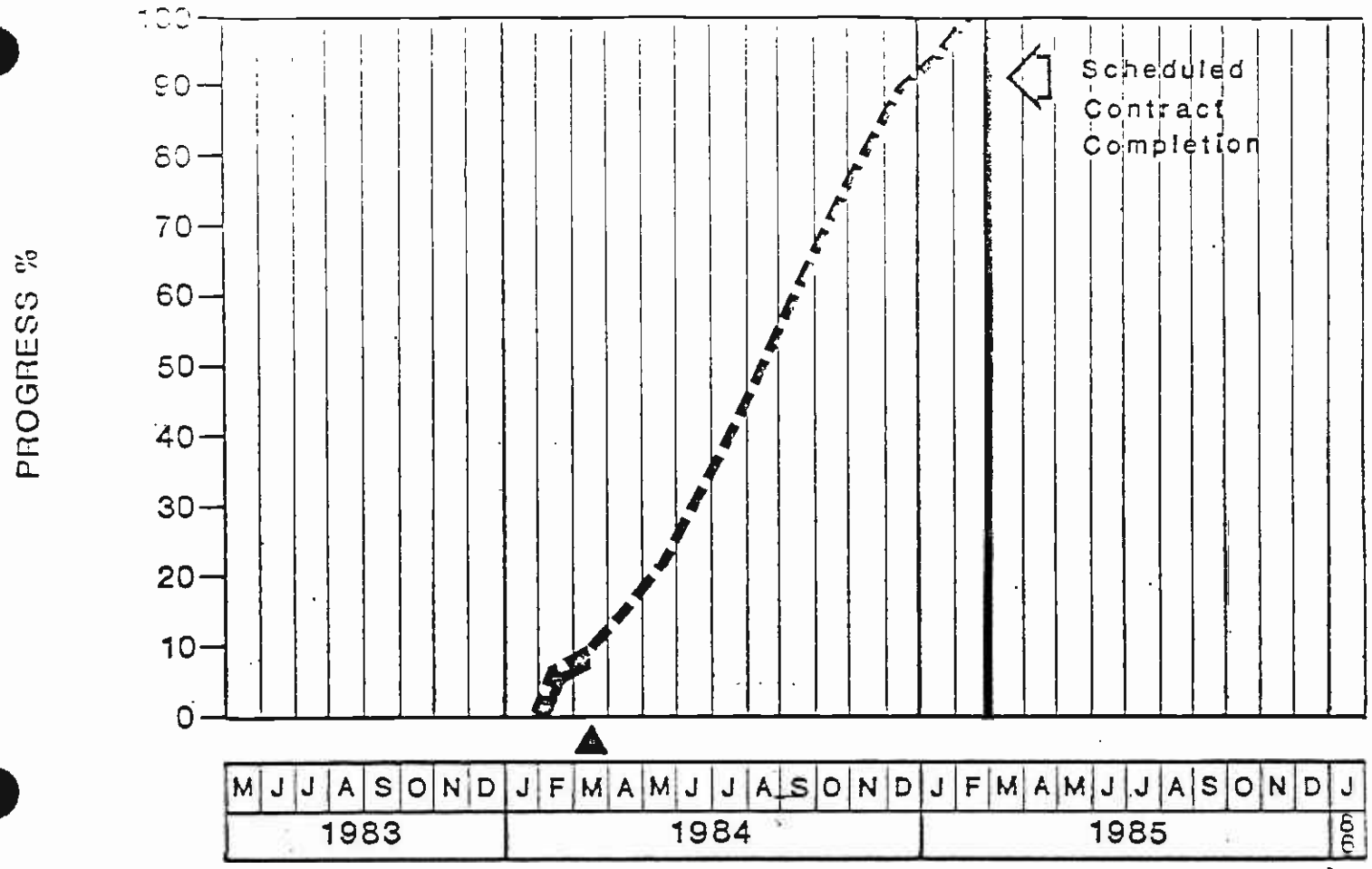
There are no areas of concern for this period.

#### COMMENTS:

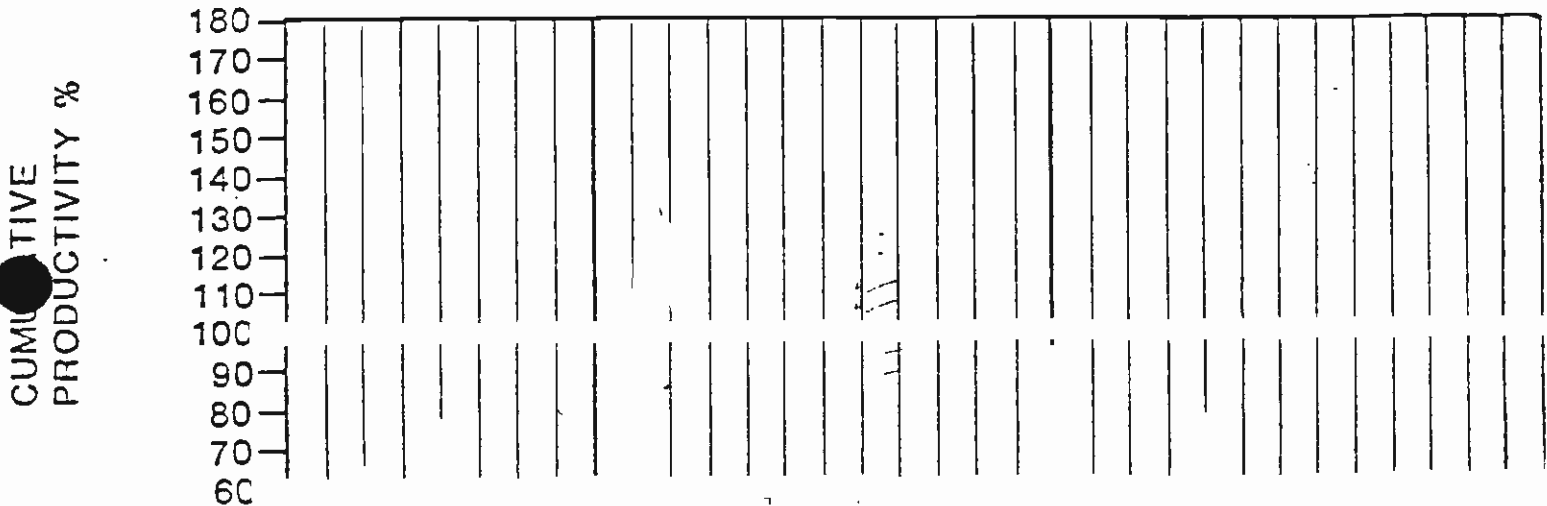
The station location for the subject contract has been moved 50 feet north to avoid pilings under Lankershim Boulevard bridge and caissons under the Post Office - no construction impact.

#### PERFORMANCE ASSESSMENT:

Subcontractor is on schedule.



MRTC REPORT	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	
PLANNED									5	10	15	22	31	40	50	60	71	81	95	100		
ACTUAL									4	8.5												
FORECAST							N	T	A	V	A	I	L	A	B	L	E					

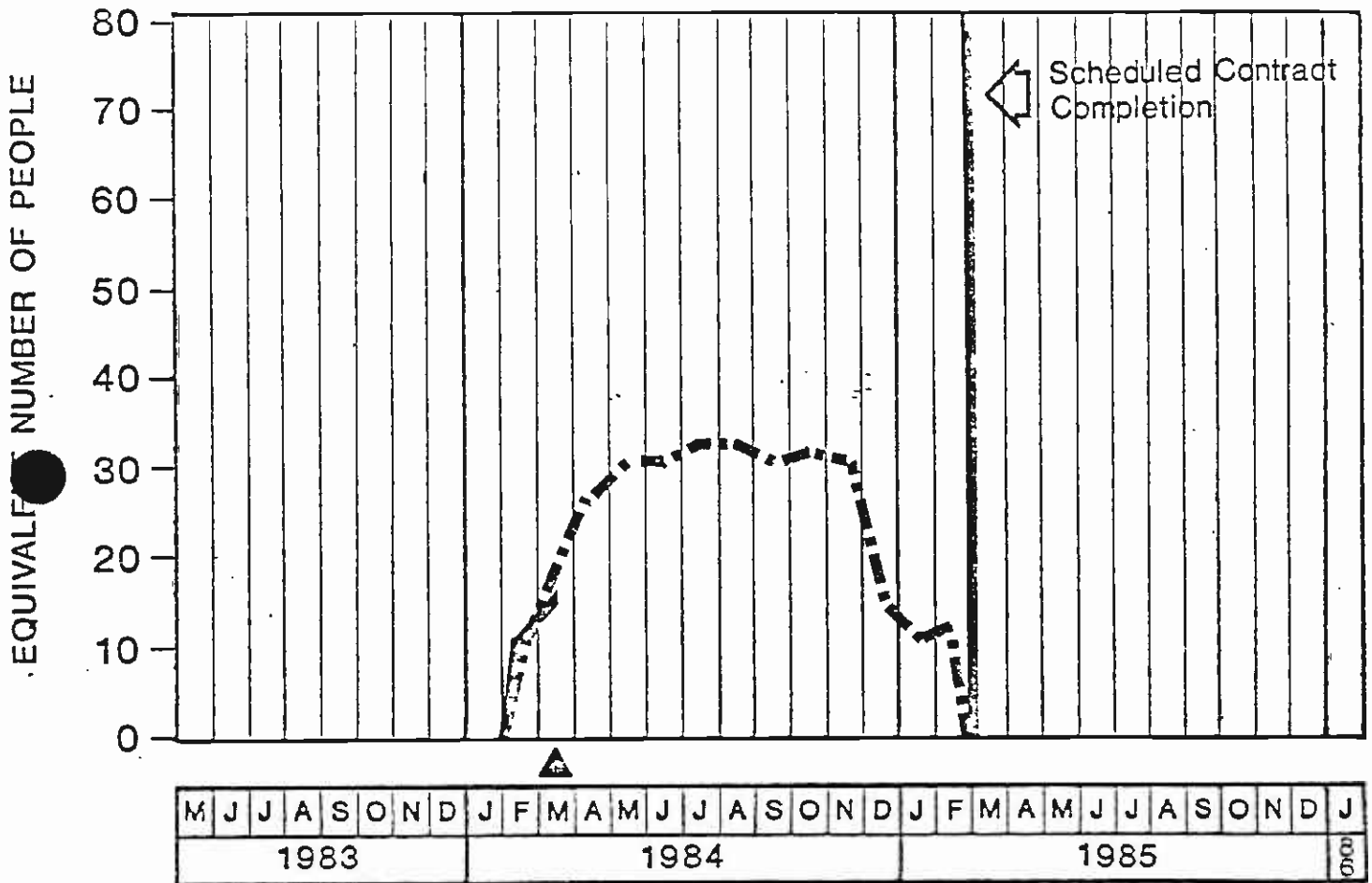


CONTRACT - A425

DESCRIPTION UNIVERSAL CITY STATION

SECTION DESIGNER THE LUCKMAN PARTNERSHIP

### MANPOWER PLAN



PLANNED

FORECAST NOT AVAILABLE

ACTUAL

# MTA LIBRARY

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A430 LINE FROM UNIVERSAL CITY TO NORTH HOLLYWOOD  
 DESIGN CONTRACTOR - PAE/WH/S & W

COMMENTS ON MRTC PROGRESS REPORT

- o NO MONTHLY COST OR LABOR FORECAST IS SHOWN CORRESPONDING TO THE SLIP IN SCHEDULE.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	N/A	15	16.5
INCREMENTAL PROGRESS %	N/A	6	7.5
COST	1,969,000	1,994,000	284,000
MANHOURS	40,000	40,500	4,700
CONTRACT DURATION (MONTHS)	12	13	3

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.165 \times 40,500}{4,700} = 1.42$$

THIS IS A VERY FAVORABLE PRODUCTIVITY.

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .165 \times 1,994,000 = \$329,010$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 16.5% COMPLETE, HAS THEORETICALLY EARNED \$329,010.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{329,010}{284,000} = 1.16$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 1.16 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THE CPI, ALTHOUGH NOT AS HIGH AS PRODUCTIVITY, INDICATES STRONG COST PERFORMANCE.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 284,000 - 329,010 = \$ 45,010$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$45,010.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A430 LINE FROM UNIVERSAL CITY TO NORTH HOLLYWOOD  
DESIGN CONTRACTOR - PAE/WH/S & W

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{284,000}{1,994,000} = 14.2\%$$

THE CONTRACTOR HAS SPENT 14.2% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 16.5%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{1,994,000}{1.16} = \$ 1,718,966$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$1,718,966. THIS REPRESENTS A COST UNDERRUN OF \$250,034 OR A 13% DECREASE. THERE IS A GOOD POSSIBILITY THAT THIS PROJECTED UNDERRUN WILL DECREASE AS THE CONTRACT PROGRESSES.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION - EARNED COSTS}}{\text{FORECAST AT COMPLETION - ACTUAL \$ SPENT}} = \frac{1,994,000 - 329,010}{1,994,000 - 284,000}$$

$$= 97\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 97% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST. THERE SHOULD BE NO PROBLEM IN ATTAINING THIS EFFICIENCY RATIO.

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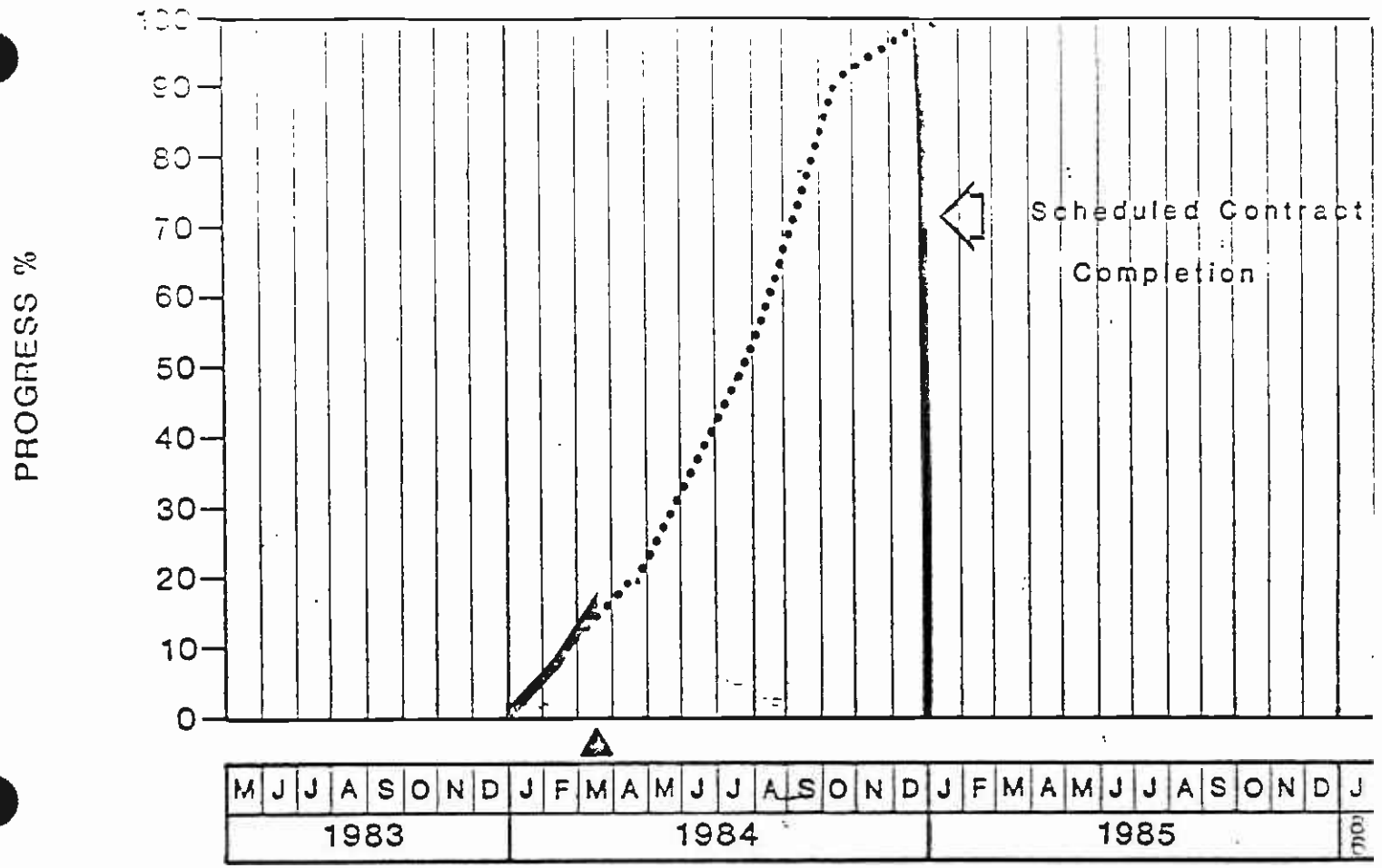
CONCLUSION

THE COST RATIOS INDICATE VERY FAVORABLE PROGRESS DESPITE SEVERAL MODIFICATIONS TO THE LINE DESIGN (I.E. ALIGNMENT AT L.A. RIVER BRIDGE AND AMENDED CROSSOVER AND MID-LINE VENT CONFIGURATIONS). HOWEVER, THE CUMULATIVE PRODUCTIVITY IS EXTREMELY HIGH 142% TO BE ONLY 1.5% AHEAD OF THE PROGRESS FORECAST. THE PRODUCTIVITY IS ALSO HIGH AS COMPARED TO THE COST PERFORMANCE INDEX OF 1.16. THIS INDICATES THAT THE HOURLY RATE IS SUBSTANTIALLY HIGHER THAN PLANNED.

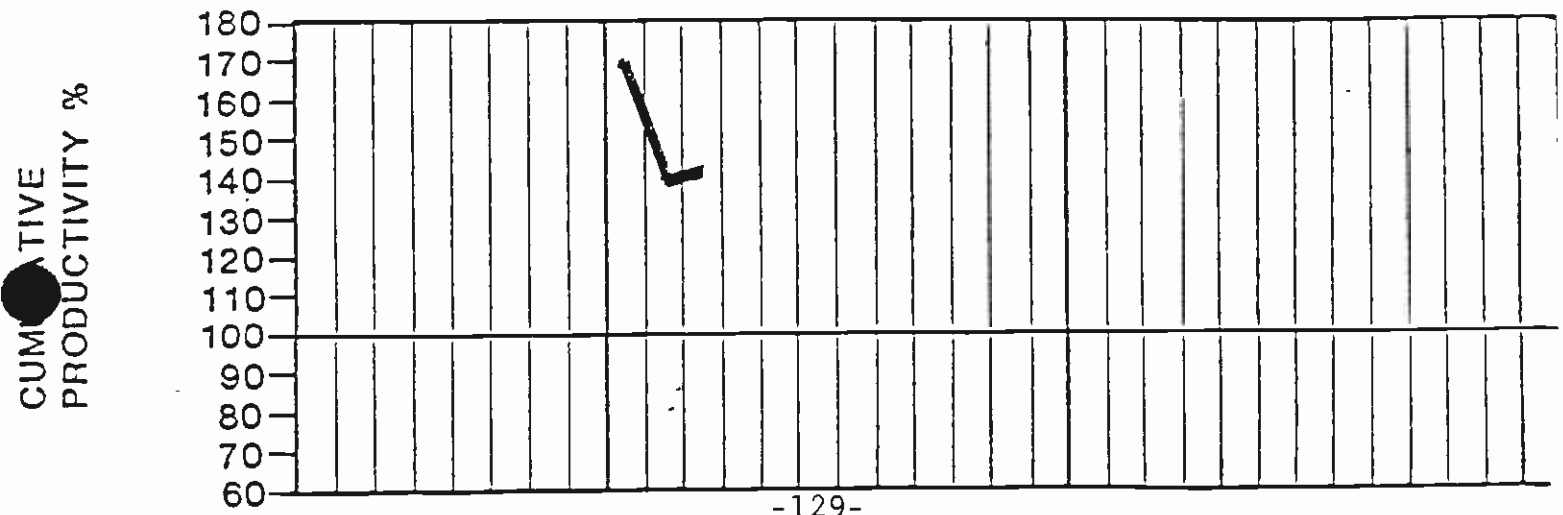
REDESIGN DUE TO TUNNEL ALIGNMENT CHANGE WILL RESULT IN INCREASED COST FOR THIS CONTRACT BUT WILL REDUCE THE PROJECTED CONSTRUCTION COST.



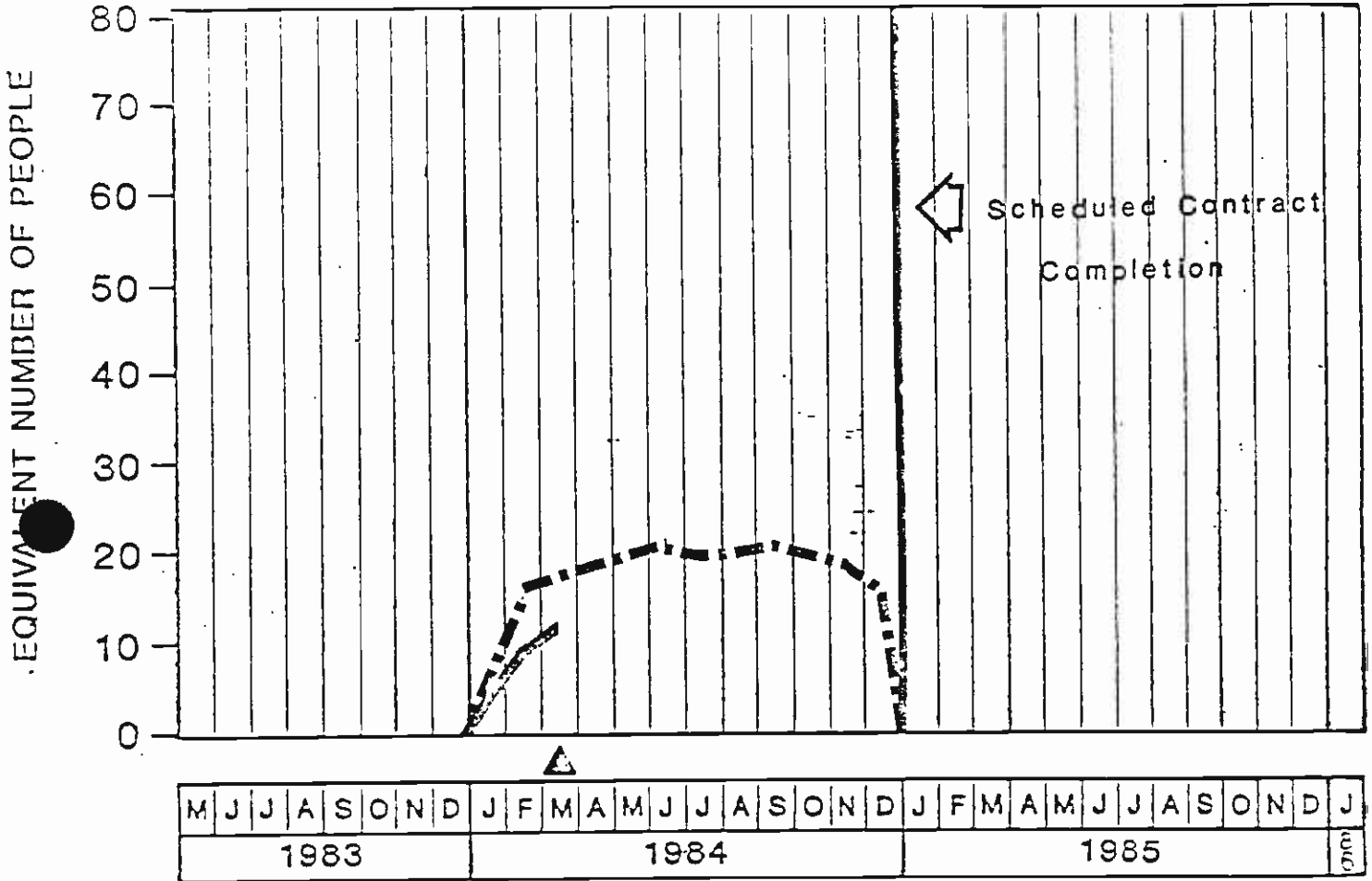




MRTC REPORT	PLANNED																																				
	ACTUAL									3	9	6.5																									
	FORECAST									3	9	11	2	3	5	6	8	8	9.5	9.5	0																



### MANPOWER PLAN



PLANNED

FORECAST NOT AVAILABLE

ACTUAL

# MTA LIBRAR

RTD METRO RAIL PROJECT  
 C.P.E. PHASE  
 SUBCONTRACTOR EVALUATION  
 MARCH 1984

COST ANALYSIS

CONTRACT # - A445 NORTH HOLLYWOOD  
 DESIGN CONTRACTOR - GIBBS & GIBBS

COMMENTS ON MRTIC PROGRESS REPORT

- o NO DISCUSSION ON CHANGES THAT RESULTED IN A NEW FORECAST.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	7	7	6.1
INCREMENTAL PROGRESS %	2	2	1.6
COST	2,142,000	2,167,000	161,000
MANHOURS	45,100	45,600	2,700
CONTRACT DURATION (MONTHS)	19	19	3

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{6.1 \times 45,600}{2,700} = 103$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = 6.1 \times 2,167,000 = \$132,187$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 6.1% COMPLETE, HAS THEORETICALLY EARNED \$132,187.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{132,187}{161,000} = .82$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .82 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS IS NOT A SATISFACTORY CPI.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 161,000 - 132,187 = \$ 28,813$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$28,813.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A445 NORTH HOLLYWOOD  
DESIGN CONTRACTOR - GIBBS & GIBBS

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{161,000}{2,167,000} = 7.4\%$$

THE CONTRACTOR HAS SPENT 7.4% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 6.1%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,167,000}{.82} = \$ 2,642,682$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,642,682. THIS REPRESENTS A COST OVERRUN OF \$475,682 OR A 22% INCREASE FROM PRESENT FORECAST, BUT \$500,682 INCREASE FROM THE PLANNED BUDGET.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,167,000 - 132,187}{2,167,000 - 161,000} = 101\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 101% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

THIS CONTRACT IS INDICATING PRODUCTIVITY IN EXCESS OF 100%, BUT IS BEHIND IN PROGRESS. FURTHERMORE, THE ACTUAL COST PER MANHOUR HAS INCREASED 26% OVER THE PLANNED COST PER MANHOUR (59.63 VS. 47.50). THE CONTRACTOR IS USING UP THE DOLLARS FASTER THAN THE HOURS; THIS INDICATES THAT THEY ARE USING HIGHER PRICE PEOPLE THAN ORIGINALLY PLANNED. NONE OF THE ABOVE PROBLEM AREAS HAVE BEEN DISCUSSED IN THE NARRATIVE.

05/15/84  
PC-14.20<24>

SUBCONTRACTOR EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

DESIGN CONTRACT: A445 North Hollywood Station  
DESIGN SUBCONTRACTOR: Hugh Gibbs & Don Gibbs  
PROJECT MANAGER (TSD/MRTC): Quesada/Challes

AWARD: 06/16/83  
NTP: 12/29/83  
DURATION: 548  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	01/11/84	-	02/01/84	-
IN PROG. SUBMITTAL (60%)	09/20/84	09/20/84	-	-
PRE FINAL SUBMITTAL (85%)	01/31/85	01/31/85	-	-
FINAL SUBMITTAL (100%)	05/27/85	05/27/85	-	-
BID DOCUMENTS	06/28/85	06/28/85	-	-
TIME OF PERFORMANCE	06/28/85	06/28/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

Resolutions regarding the Southern Pacific Transportation Company's desired 50-foot operating right-of-way are under final evaluation by SCRTD.

COMMENTS:

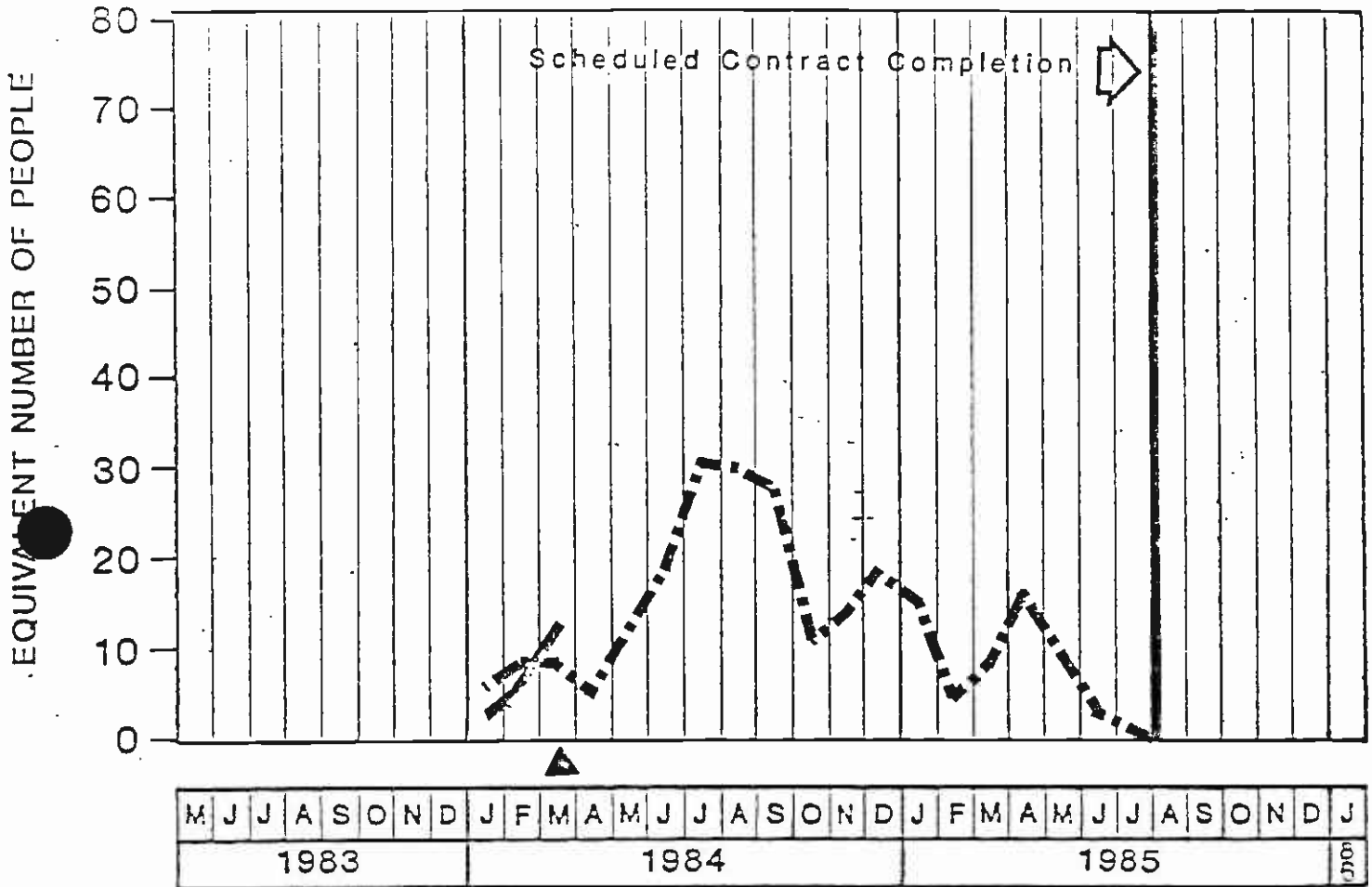
A comprehensive Design Schedule review has been performed by TSD/Program Control. Comments have been forwarded to MRTC.

PERFORMANCE ASSESSMENT:

The Contract is on schedule.



### MANPOWER PLAN



PLANNED

FORECAST

ACTUAL

SYSTEMS EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: MARCH 31, 1984

SYSTEM DESCRIPTION: Trackwork Procurement and Installation  
SYSTEM RESPONSIBILITY: MRTC Work Program  
PROJECT MANAGER (TSD/MRTC): J. Valencia

START: 02/01/84  
COMPLETE: 01/01/86  
DURATION: 698  
(CALENDAR DAYS)

MAJOR MILESTONES (Installation Design Only)	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	09/01/84	09/01/84	-	0
DESIGN SUBMITTAL (60%)	01/01/85	01/01/85	-	0
DESIGN SUBMITTAL (85%)	07/01/85	07/01/85	-	0
DESIGN SUBMITTAL (100%)	11/01/85	11/01/85	-	0
BID DOCUMENTS	01/01/86	01/01/86	-	0

RESOLUTIONS OF LAST PERIODS PROBLEMS

No problems last period.

AREAS OF CONCERN

Design schedules for the contracts listed below are currently being revised to show the schedule requirements for long lead procurement time and installation. MRTC Project Manager has not received approval of the revised schedules at this time.

COMMENTS:

This system responsibility includes design of the following Contracts:

- A610 Mainline Trackwork Installation
- A611 Running Rail Procurement
- A613 Ties Procurement
- A614 Special Trackwork Procurement
- A616 Track Fasteners Procurement
- A617 Rail Welding Service
- A618 Yard Trackwork Installation

PERFORMANCE ASSESSMENT:

All work is proceeding on schedule.



SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A620 Automatic Train Control	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC	COMPLETE: 04/2/85
PROJECT MANAGER(TSD/MRTC): M. Becher/M. Burgess	DURATION: 724 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	09/16/83	-	09/16/83	-
DESIGN SUBMITTAL (50/60%)	04/15/84	04/15/84	-	-
DESIGN SUBMITTAL (85/90%)	12/09/84	12/09/84	-	-
DESIGN SUBMITAL (100%)	04/19/85	04/19/85	-	-
ADVERTISE	06/07/85	06/07/85	-	-
AWARD	12/06/85	12/06/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The problem mentioned last period remains unresolved (overdue comments to revised specification sections).

AREAS OF CONCERN:

Comments on revised specification sections are overdue and have now impacted the industry review schedule. The scheduled transmittal has been rescheduled one week later to April 15, 1984.

COMMENTS:

Work is continuing to complete the specifications to a point suitable for industry review.

PERFORMANCE ASSESSMENT:

The contract is proceeding on schedule. The scheduled date for the 50/60 percent Design Submittal has been rescheduled without notification or approval to do so. Further rescheduling of intermediate submittals will impact the completion of the contract.



SYSTEMS EVALUATION

SCHEDULE ANALYSIS  
 STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A640 Communications  
 SYSTEM RESPONSIBILITY: MRTC  
 PROJECT MANAGER(TSD/MRTC): L.Durrant/C. Fisher

START: 05/02/83  
 COMPLETE: 04/26/85  
 DURATION: 724  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	04/30/84	04/30/84	-	-
DESIGN SUBMITTAL (50/60%)	10/30/84	10/30/84	-	-
DESIGN SUBMITTAL (85/90%)	02/05/85	02/05/85	-	-
DESIGN SUBMITTAL (100%)	04/26/85	04/26/85	-	-
ADVERTISE	06/26/85	06/26/85	-	-
AWARD	03/04/86	03/04/86	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

Need a cost comparison for smart versus wired logic SCADA (Supervisory Control and Data Acquisition) approach.

COMMENTS:

The 30% review and the 50/60% review have been rescheduled. Dates are shown above.

A draft Intermediate Technical Specification for Communications has been completed.

Submittals are achievable, except for the 30% and 50/60% submittals.

PERFORMANCE ASSESSMENT:

Work for this contract is on schedule.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A650 Passenger Vehicle  
 SYSTEM RESPONSIBILITY: MRTC In-House Design  
 PROJECT MANAGER (TSD/MRTC): L. Durrant/S. Rodda

START: 05/02/83  
 COMPLETE: 01/15/85  
 DURATION: 623  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	10/03/83	-	10/03/83	-
DESIGN SUBMITTAL (60%)	05/15/84	06/01/84	-	-17
DESIGN SUBMITTAL (85/90%)	07/31/84	09/09/84	-	-40
DESIGN SUBMITTAL (100%)	11/30/84	01/01/85	-	-32
ADVERTISE	01/15/85	07/01/85	-	-167*
AWARD	07/30/85	09/30/85	-	-62
NTP	-	01/30/85	-	-

\* Advertise three months before award.

RESOLUTIONS OF LAST PERIODS PROBLEMS:

None

AREAS OF CONCERN:

1. Availability of main yard
2. Availability of power
3. Clear tracks out to Wilshire/Vermont for testing of vehicles

COMMENTS:

MRTC and TSD System Design staff continue to work additional hours to maintain the revised forecasted schedule.

PERFORMANCE ASSESSMENT:

Planned work is approximately two weeks behind schedule. Next submittal (60%) forecasted for June 1, 1984.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS  
 STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A660 Fare Collection  
 SYSTEM RESPONSIBILITY: MRTC  
 PROJECT MANAGER(TSD/MRTC): D. Gary/C. Williams

START: 05/02/83  
 COMPLETE: 01/01/86  
 DURATION: 972  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	03/13/84	-	03/13/84	-
DESIGN SUBMITTAL (50/60%)	11/01/84	11/01/84	-	-
DESIGN SUBMITTAL (85/90%)	06/01/85	06/01/85	-	-
DESIGN SUBMITTAL (100%)	01/02/86	01/02/86	-	-
ADVERTISE	04/01/86	04/01/86	-	-
AWARD	08/29/86	08/29/86	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

There are no areas of concern at this time.

COMMENTS:

The 30% Design Review was held on March 13, 1984, as scheduled.

PERFORMANCE ASSESSMENT:

The contract is on schedule.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS  
 STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A670 Auxiliary Vehicles Locomotive *	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC In-house Design	COMPLETE: 12/31/84
PROJECT MANAGER(TSD/MRTC): R. Beuermann/P. Berkley	DURATION: 243 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN SUBMITTAL (50/60%)	05/01/84	05/07/84	-	-6
DESIGN SUBMITTAL (100%)	10/01/84	10/01/84	-	-
ADVERTISE	01/01/85	01/01/85	-	-
AWARD	05/01/85	05/01/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Auxiliary vehicle equipment requirements are being established per review action item. Currently, MRTC lists eight auxiliary vehicles in the System Design Status Report.

\* A schedule analysis will be included for all auxiliary vehicles as requirements are established.

AREAS OF CONCERN:

There are no major areas of concern. Responses have been slow from prospective manufacturers. Possible reasons is that the District is proposing to purchase one (1) locomotive.

COMMENTS:

PERFORMANCE ASSESSMENT:

Planned work on schedule. Revised schedule for design reviews will be established for auxiliary vehicle equipment list.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A710 Elevators  
 SYSTEM RESPONSIBILITY: MRTC  
 PROJECT MANAGER (TSD/MRTC): M. Becher/A. Racho

START: 05/02/83  
 COMPLETE: 06/01/84  
 DURATION: 396  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	07/15/83	-	07/15/83	-
DESIGN SUBMITTAL (60%)	01/30/84	-	02/08/84	-
DESIGN SUBMITTAL (85%)	04/16/84	04/16/84	-	-
DESIGN SUBMITTAL (100%)	06/01/84	06/01/84	-	-
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

No problem areas were reported last period.

AREAS OF CONCERN:

There are no problem areas.

COMMENTS:

The 85% submittal has been rescheduled two weeks later to April 16, 1984 in order to allow time to incorporate comments made during the 60% re-view. Review meeting for 60% submittal was held March 15, 1984.

PERFORMANCE ASSESSMENT:

Proceeding on schedule with no problems.

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SYSTEMS EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A720 Elevators  
SYSTEM RESPONSIBILITY: MRTC  
PROJECT MANAGER (TSD/MRTC): M. Becher/A. Racho

START: 05/02/83  
COMPLETE: 07/01/84  
DURATION: 424  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	07/15/83	-	07/15/83	-
DESIGN SUBMITTAL (60%)	04/12/84	04/12/84	-	-
DESIGN SUBMITTAL (85%)	05/01/84	05/01/84	-	-
DESIGN SUBMITTAL (100%)	07/01/84	07/01/84	-	-
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

No problem areas were reported last period.

AREAS OF CONCERN:

There are no areas of concern this period.

COMMENTS:

The 60% submittal has been rescheduled four weeks later to April 12, 1984. Design drawings were delayed and are awaiting additional information from elevator manufacturers.

PERFORMANCE ASSESSMENT:

Proceeding with no problems on schedule. The scheduled date for the 60% design submittal has been rescheduled without any notification of approval. Further rescheduling on intermediate submittals will impact the completion of the contract.



SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A740 Fan Procurement  
 SYSTEM RESPONSIBILITY: Parsons Brinkerhoff  
 PROJECT MANAGER(TSD/MRTC): M. Becher/K. Sain

START: 02/02/84  
 COMPLETE: 04/30/84  
 DURATION: 87  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (50/60%)	02/27/84	-	03/06/84	-
DESIGN SUBMITTAL (85-90%)	04/02/84	04/17/84*	-	-15
BID DOCUMENTS	04/30/84	TBD	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

The 50% design submittal is currently under review.

\* The 90% Design Submittal is forecast for 4/17/84 and is expected to reflect a 95% design level. The submittal will be distributed and reviewed. A design review meeting will be held in June 1984.

The results of the Methane Gas Study do not impact the current ventilation system design.

COMMENTS:

The availability of site specific shaft configurations and damper sizes determine when the final (100%) design is complete and Bid Documents are prepared.

PERFORMANCE ASSESSMENT:

Project completion cannot be determined until site specific structural information is available.



SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: March 31, 1984

SYSTEM DESCRIPTION: A760 Graphics and Signage

SYSTEM RESPONSIBILITY: MRTC

PROJECT MANAGER(TSD/MRTC): D. Low/A. Racho

START: 02/22/84

COMPLETE: 10/01/84

DURATION: 122  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	04/01/84	04/01/84	-	-
DESIGN SUBMITTAL (50/60%)	06/30/84	06/30/84	-	-
DESIGN SUBMITTAL (85/90%)	08/01/84	08/01/84	-	-
DESIGN SUBMITTAL (100%)	10/01/84	10/01/84	-	-
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

None.

COMMENTS:

The services of Felix/Harmon for the subject contract were terminated March 28, 1984. According to the MRTC Project Manager, design will be done in-house. Changes in the submittal dates will be shown in next month's report. Schedule dates will be later than those shown above.

PERFORMANCE ASSESSMENT:

Work is on schedule.